

May  
1927

# Construction Methods

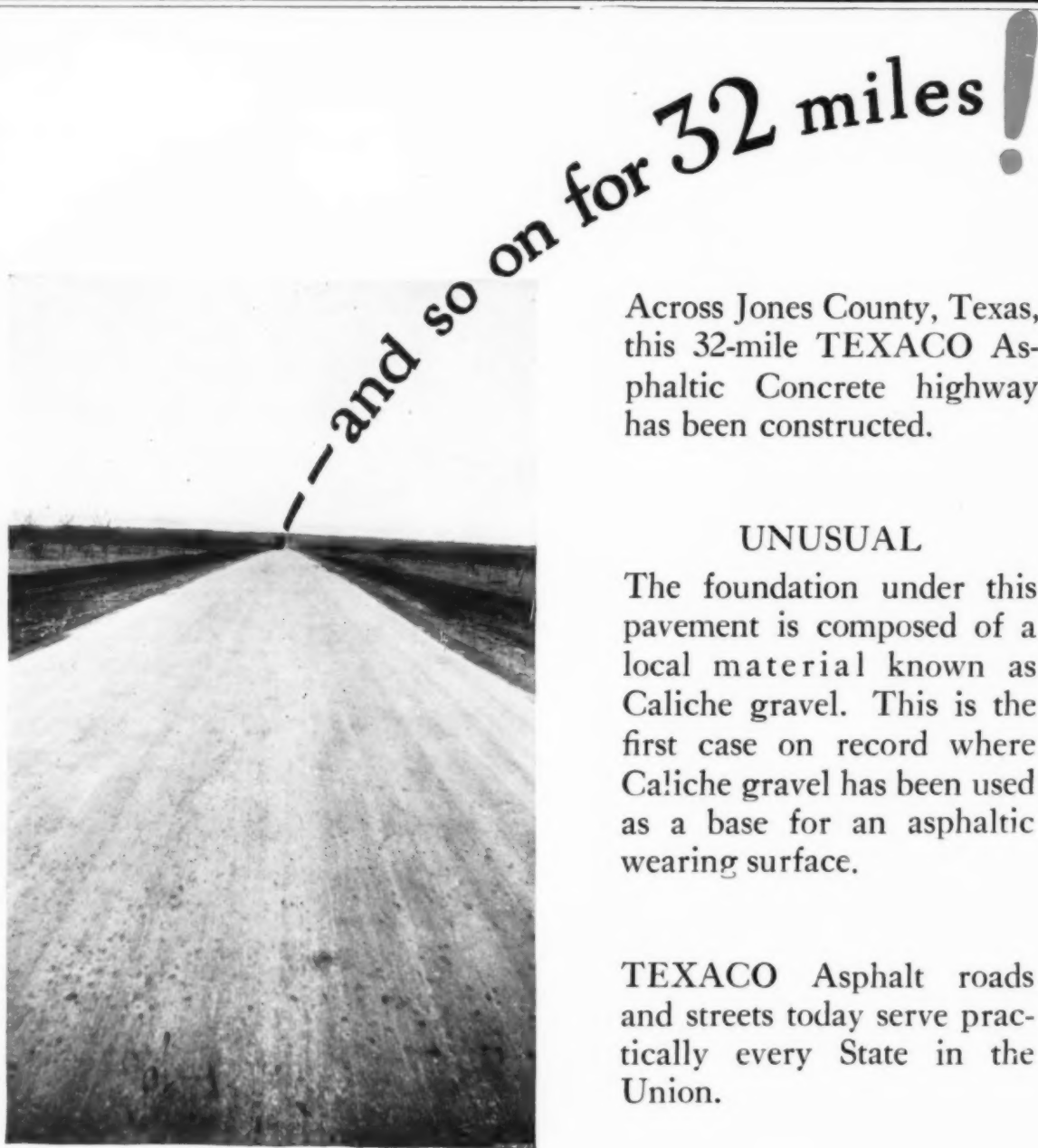
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# Construction Methods

McGraw-Hill Publishing Company, Inc.

Tenth Ave. at 36th Street

New York, N. Y.

# Construction Methods

## Hitting the High Spots

**W**E ALL know the landlord who refuses to make repairs until his tenants force him to get busy by threatening to move out. Therefore, it is refreshing to find one whose tenants never threaten to abandon the premises, but who, nevertheless, undertakes to make necessary repairs. We have an article about that



sort of landlord in this issue, and in order that he should receive all due credit for his thoughtfulness we have given him a front seat—the cover and pages 6-8. He is none other than our own Uncle Sam, who is busily engaged just now in repairing the White House roof. His tenants have never threatened to move out. In fact, he has a big waiting list of those who would like to move in, and the old roof has been doing duty for only one hundred and thirteen years. He surely is an exceptional landlord.

**T**HAT White House job is well worth reading about, even though it might well have been done a number of years ago. The men who are doing it realize the importance of their work, and are handling it in a manner that reflects the greatest credit on the whole construction industry.

In the last few years, North Carolina has been making a name for itself by its extraordinary development. Its splendid highway program put through by Frank Page is known throughout the land. On pages 18, 19 and 20, we have another phase of North Carolina's activity. Not content with the natural beauty of their mountain country, some men down there have boldly ventured to help Nature a little by making a lake to order. This body of water, known as Lake Lure, was made as part of a resort development. The job of building the dam is described.

The Blue Book this month has some pictures of the new International Peace bridge across the Niagara River near Buffalo. This great structure will be opened



next month. The Blue Book occupies pages 9 to 12 this month.

**I**T ALWAYS is interesting to see how the other fellow handles the everyday operations incident to construction work, and in the



last few issues we have devoted a number of pages to the jobs that every contractor has to handle, no matter what sort of structure he is putting up. This month we have two sets of "Step by Step" pictures, one

on pages 34 and 35 showing the reconditioning of a portable compressor, and the other on pages 28 to 31 showing how a Los Angeles contractor put up a stiff-leg derrick. In the derrick series, we have stolen an idea from the New York subway in order to make it easy for you to go from one step to the other. When you get to page 28, just "Follow the Red Line," and your path through the pictures will be made smooth.

**A**LBANY, the capital of the State of New York, just insists on breaking into our columns. Only a couple of months ago we described the moving of a big apartment in Albany, and now we have another moving job—not so heavy, but more delicate—from the same city. For the sake of sentiment, a motive which doesn't seem to enter into construction as often as most of us would like to see it, an Albany bank—and who ever heard of a sentimental bank?—has preserved the front of its old building put up in 1803, and used it as the main entrance of its new sixteen-story structure. The old wall had to be moved only a few feet, but it was a job that required the greatest skill. Read about it on pages 24 to 26.



Now that spring is here, the 1927 construction season is getting into its full stride. To every reader *Construction Methods* extends its wishes for a prosperous year. And if we can help you, we'll do it.

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# Construction Methods

McGraw-Hill  
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*A Monthly Pictorial of Field Practice and Equipment Illustrating Successful Construction, Maintenance and Material-Handling Methods for General Construction, Highways, Buildings, Industrial Plants and Public Works and Utilities*

WILLIAM JABINE  
Editor

VOLUME 9

NEW YORK, MAY, 1927

NUMBER 5

## "The Tribe Who Are Fighting Swift Water"

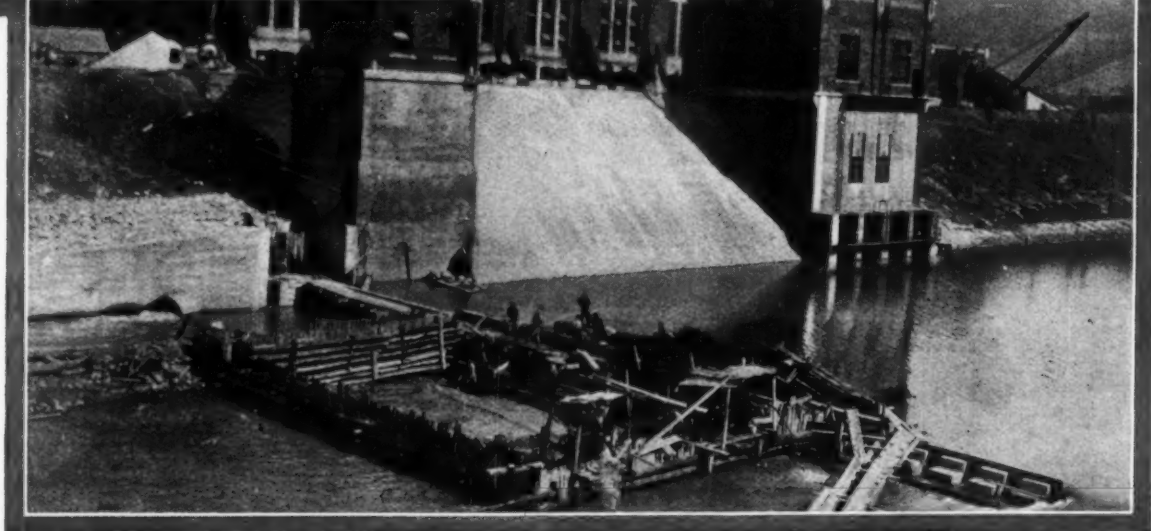
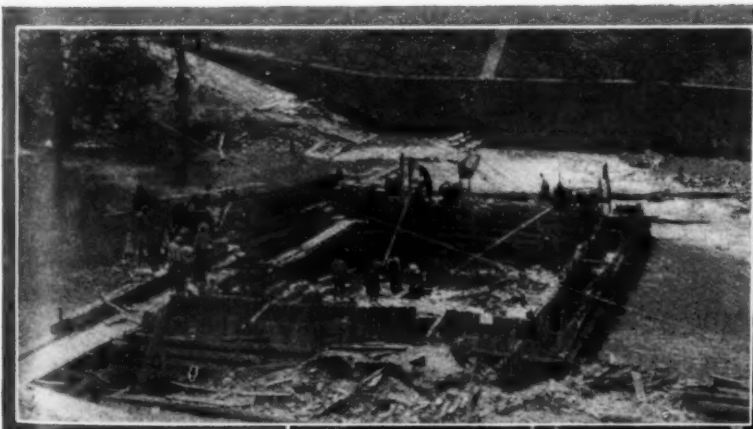
**A**T THIS time of the year when in every section of the country the rivers are in flood, a description of the work done by the "tribe who are fighting swift water" seems most appropriate. Both job and phrase belong to C. H. Dickore, general superintendent of F. W. Graham Co., general contractors of Pineville, Ky.

Mr. Dickore was called upon to handle an emergency at Four Mile, Bell County, Ky., when the west end of a concrete dam owned by the Kentucky Utilities Co., threatened to cave in as a result of the failure of the sawed timber braces which weakened during a freshet in the Cumberland

River. The only timber available was white oak logs from the nearby mountains, and with them Mr. Dickore built a crude log coffer puddle dam in mid-stream. On two occasions there were 20-ft. of water over the cofferdam with no ill effects. The construction of this dam made it possible to finish without further trouble the concrete dam which was 310 ft. long and 16 ft. high.

A letter from Mr. Dickore which enclosed one of the photographs, closes with the phrase at the head of this article. He says, "I thought the pictures would be of interest to some of 'the tribe' who are fighting swift water."

Cofferdam built of big timbers to handle an emergency created by a flood in the Cumberland River at Four Mile, Ky. The structure is shown from both sides of the stream



# Variety Is Keynote

Contractors Are Expected to  
Jobs and Usually D

The Los Angeles City Hall now dominates the skyline of the southern California metropolis

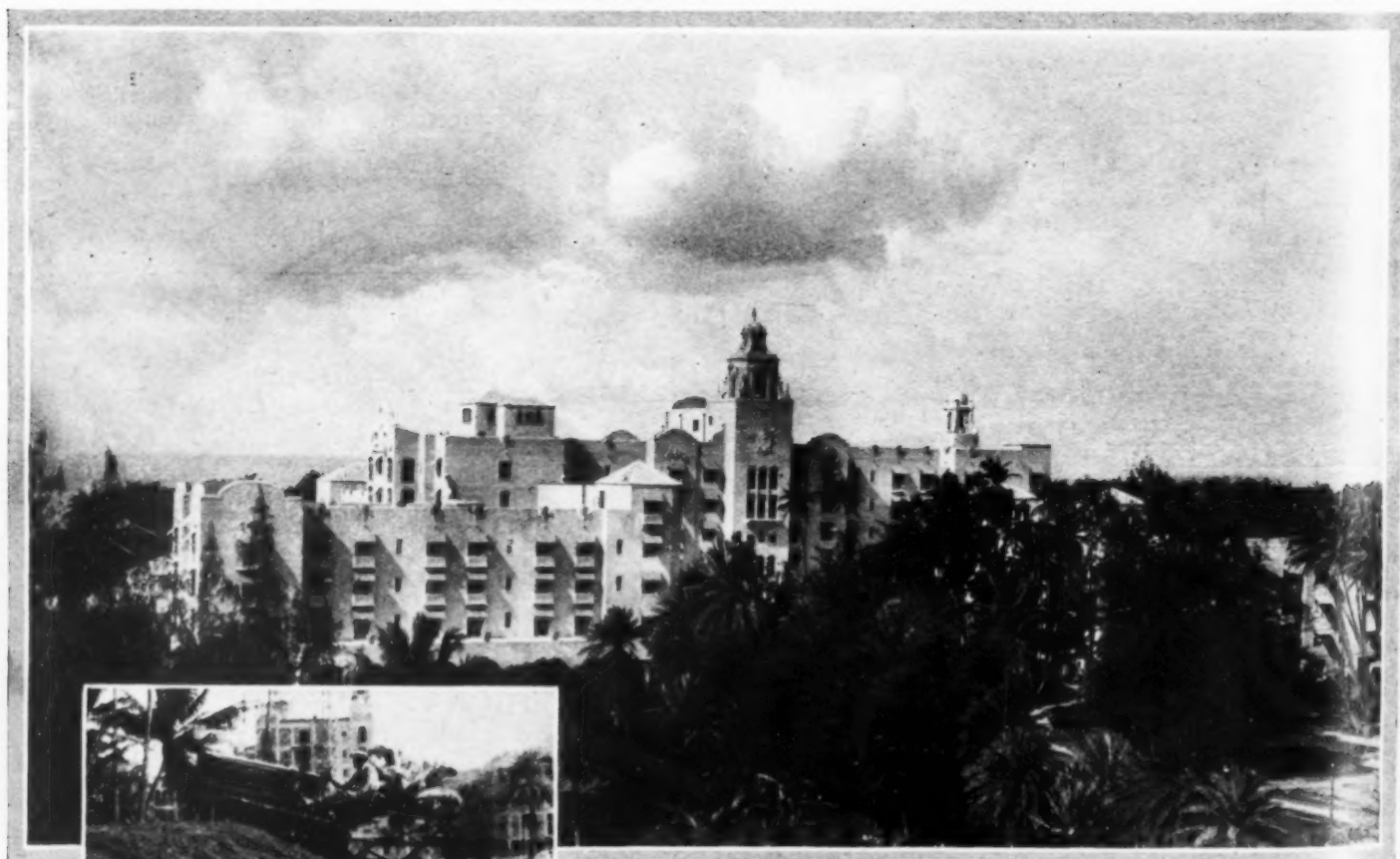


An unusual house-moving job was undertaken recently at West Newton, Mass. A frame house weighing 60 tons was moved across a bridge over a railroad track. This bridge was designed for a maximum load of 14 tons and was strengthened for the occasion by heavy beams



© Underwood & Underwood

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© Herbert

The Royal Hawaiian Hotel, close to the beach at Waikiki, is a notable structure which has recently been finished at Honolulu. At the left is a Caterpillar tractor at work grading the hotel grounds.

# ote in Construction Field

ected to Handle All Kinds of  
ally Do Them Well



This White truck is owned by the Harrison Construction Co. of Miami, Fla., and has been specially equipped for the purpose of moving palm trees. It is shown delivering a palm tree at its new location. The truck can set up the trees as well as transport them from place to place



Construction men are called upon to do all sorts of work. They are shown here installing the new bells in St. Chrysostom's Church, Chicago

© P & A



© P & A

Strips of various kinds of concrete are being laid for some road tests to be made near London. At the right is one of the engineers supervising the setting up of test blocks

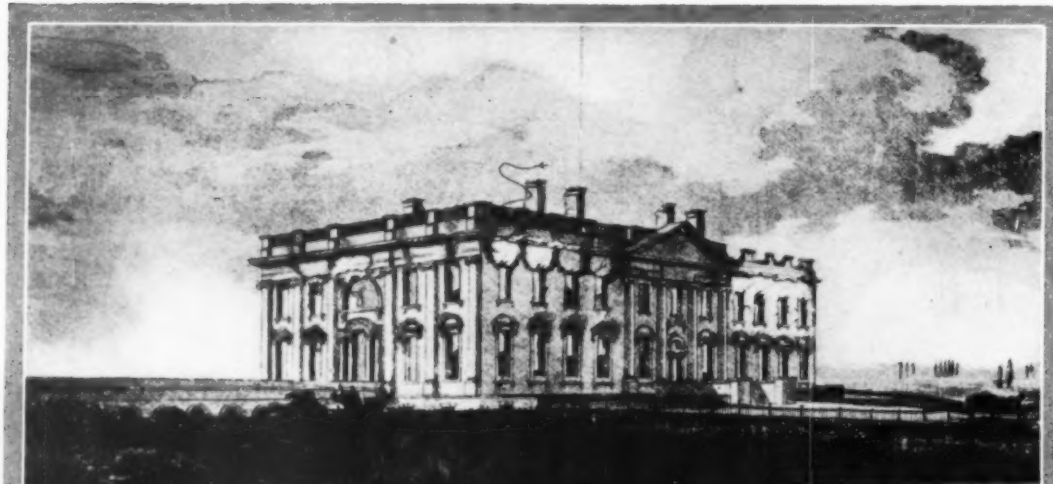


# Speed and Care Go Hand in

## Roof Built in 1814 Is Being Replaced by Modern Construction

**B**UILT in the time of Washington, burned by the British and restored under Madison, and modernized while Roosevelt was President, the White House is once more in the hands of the construction industry. This time the roof is being replaced, and the contractor handling the job is the N. P. Severin Co. of Chicago.

The contract calls for the removal of the old roof, the lowering of the level of the present third or attic story, and the building of a new and modern roof. The work must be completed in 125 calendar days, and a heavy penalty will be imposed under the terms of the contract if the job is not



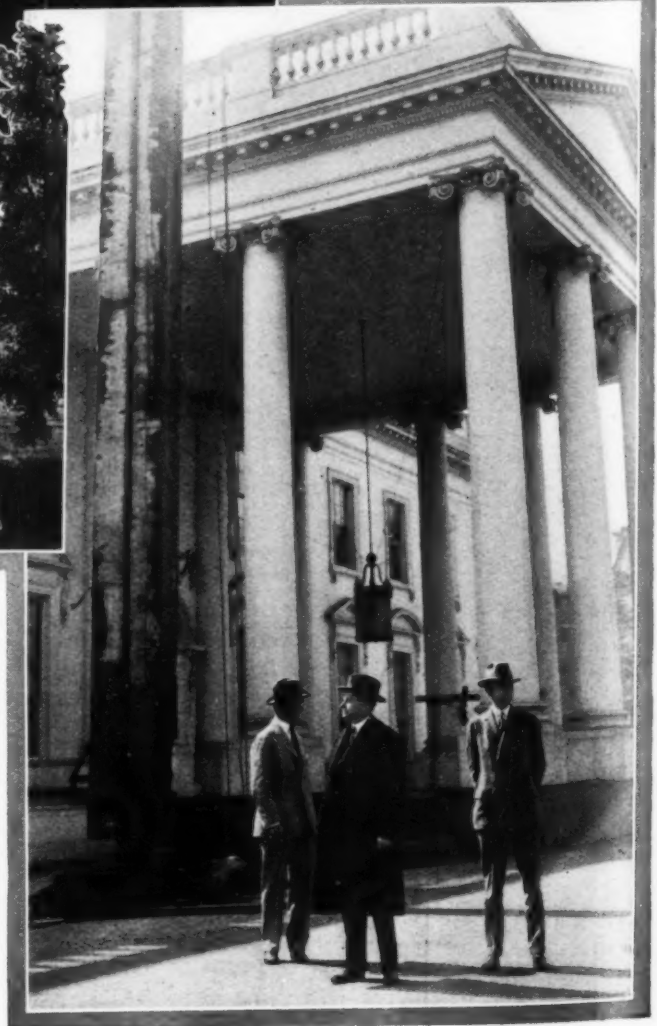
At left—The White House as it looked after the British had burned it on August 21, 1814. The roof which is now being replaced was built when the house was restored after the fire



Above—A view of the White House made not long before the Civil War

At right—President Coolidge making an inspection of the White House reconstruction a day or two after it was begun

The old prints of the White House shown above were supplied through the courtesy of the Congressional Library. The photograph at the right is copyrighted by P & A Photos and the cover photograph is copyrighted by Harris & Ewing



# Hand on White House Job

finished on time. This short time limit was set because of the fact that President Coolidge has been forced to seek other quarters while the work is going on.

Also, because of this time limit, it has been necessary to organize the job in a most thorough manner. W. F. Lusk, the superintendent in charge for the Severin Co., has planned every step of the work in advance and has prepared a progress chart which is a model of its kind. At present this progress chart shows that the work is keeping up to the schedule, and in some cases, is a little ahead. The working time runs from March 14, although a few days before that, the contractors were permitted to begin some of the temporary construction and to move in their equipment, a privilege of which they took the fullest advantage so that on the 14th they were all ready to get under way.

The first task was the construction of a temporary roof over the entire building. This temporary roof is supported by seven wood trusses 84 ft. overall with a rise of 10 ft. They are built up members made of Washington fir glued and bolted at the top and spliced and bolted at the bottom. These trusses rest on 8x8 posts which, in turn, are supported by the projection of the parapet wall on which the balustrade of the White House is set. The temporary roof is sheathed with Louisiana long-leaf pine, and the sheathing is covered with rubberized roofing. The sides from the eaves of the temporary roof to below the balustrade are covered by heavy



W. F. Lusk, superintendent for N. P. Severin Co., who is handling the White House job

canvas curtains, so arranged that they may be rolled up to admit air and light while the work is going on. This temporary roof has been constructed high enough so that when the new permanent roof has been completed, the temporary structure will clear it by 1½ ft. at the highest point.

The construction of the temporary roof was completed by March 26, and the wrecking of the old roof and third story began immediately. The old roof was built in 1814 after the British had burned the White House. It consisted of mill construction, the bottom chords of the trusses varying in size from 12x16 in. to 16x16 in. Mortise and tenon joints and key construction were used. The big

timbers were of hewn pine, probably long-leaf pine from Georgia or Louisiana, and when they were removed they were found to be in an excellent state of preservation. In some cases the joints had worked loose, but the wood itself seemed almost as good as new.

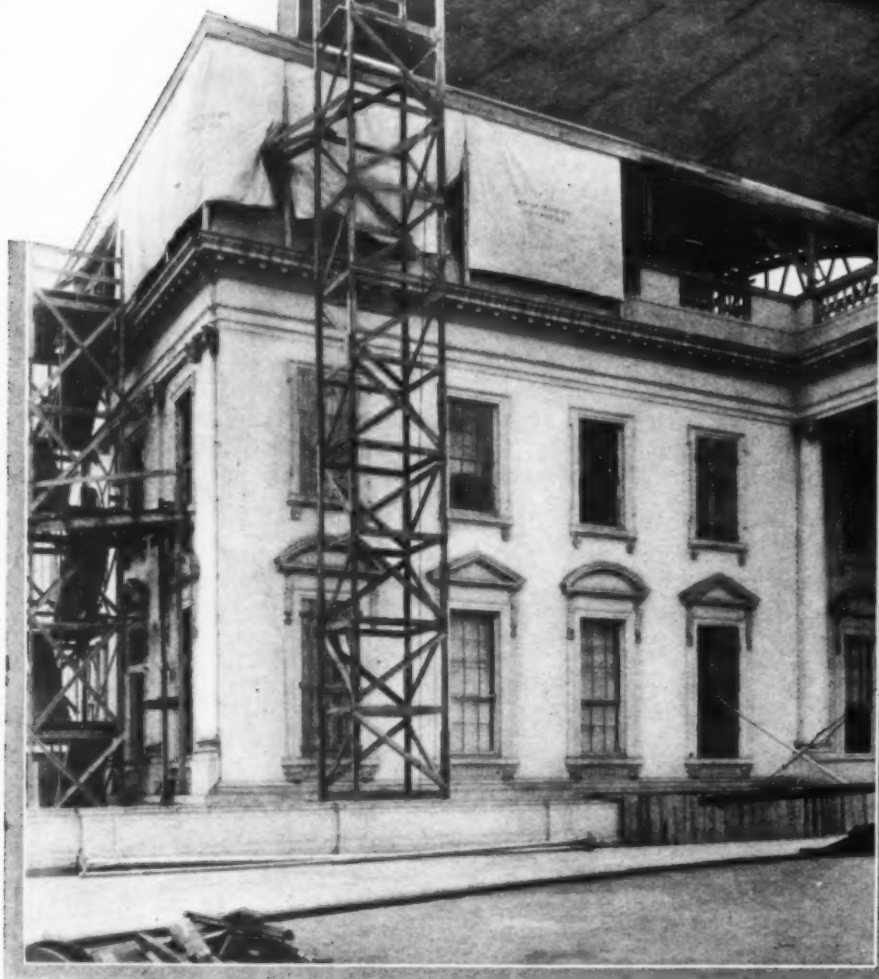
This old roof is being replaced by a structure of steel and tile. The third floor will be built of concrete which, in turn, will be covered with hardwood floors. The walls and roof will consist of arched tile and concrete slabs. The finish of the roof will be unfading green slate.

The work has been so organized that all of the various operations are being conducted simultaneously, the time limit making it impossible to remove all of the old roof before beginning the erection of the new. Work began at

The south front of the White House, showing the temporary roof in place and the chute for removing waste material



At right — Constructing the temporary roof. The timber trusses are plainly shown



At left—The northeast corner as it now looks. The hoisting tower is in the center and at the left is the temporary stairway which was used in bringing down the President's furniture in order to store it on the first floor. The protection of the stone railing in front of the White House also may be seen

unusual to find a contractor's organization handling a job so tenderly, if that expression may be used. All baseboards and other woodwork are protected by composition board, the floors of the President's living rooms on the second story are carefully covered by several layers of material including heavy planks, and each room has been curtained off from ceiling to floor with cotton drill. All stone copings have been carefully boxed so that they will not be chipped, and this procedure has been followed all the way out to the gate where the materials are brought in. The photograph of Mr. Lusk on page 7 shows the stone steps of one of

the east end of the building, and before the old trusses at the west end had been torn out, the steel was going up at the east end. The men laying tile and pouring concrete followed closely on the heels of the steel erection, and at the present time all of the operations are under way at the same time. It is planned to pour some of the concrete by night, but the rest of the work will be confined to the day shift.

Inasmuch as there are 14 or 15 sub-contractors engaged in the work, the task of organization has been extremely difficult. The Severin Co. has from time to time held meetings of the sub-contractors at which the problems involved have been discussed, and by so doing have kept the work moving forward according to the schedule.

One of the most interesting features of the job is the great care with which the work is being carried on. It is

the terraces thus protected. Greatest care also has been taken in preserving specimens of the plaster moldings so that they may be reproduced exactly as they were before. Two or three sections have been cut out of each molding, carefully boxed, and then placed with the presidential furniture on the first floor where they will be kept as patterns for the men who put in the new ceilings of the second story.

Waste materials are dumped through a chute on the south side of the building and are immediately carted away. The entire job is being conducted in such a way that the White House will not be injured.

General oversight of the work on behalf of the government is in the hands of Lieut.-Col. U. S. Grant, 3rd, who is in charge of such work in the District of Columbia. Maj. J. C. Mehaffey is supervising the work for Colonel Grant.



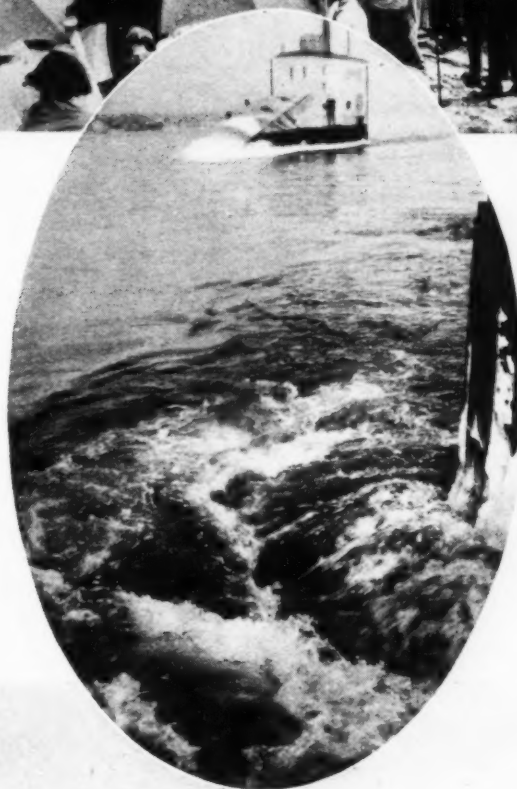
## International Peace Bridge Across Niagara River

Begun in August, 1925, the International Peace Bridge across the Niagara River between Buffalo, N. Y., and Fort Erie, Ont., is practically completed and is to be opened

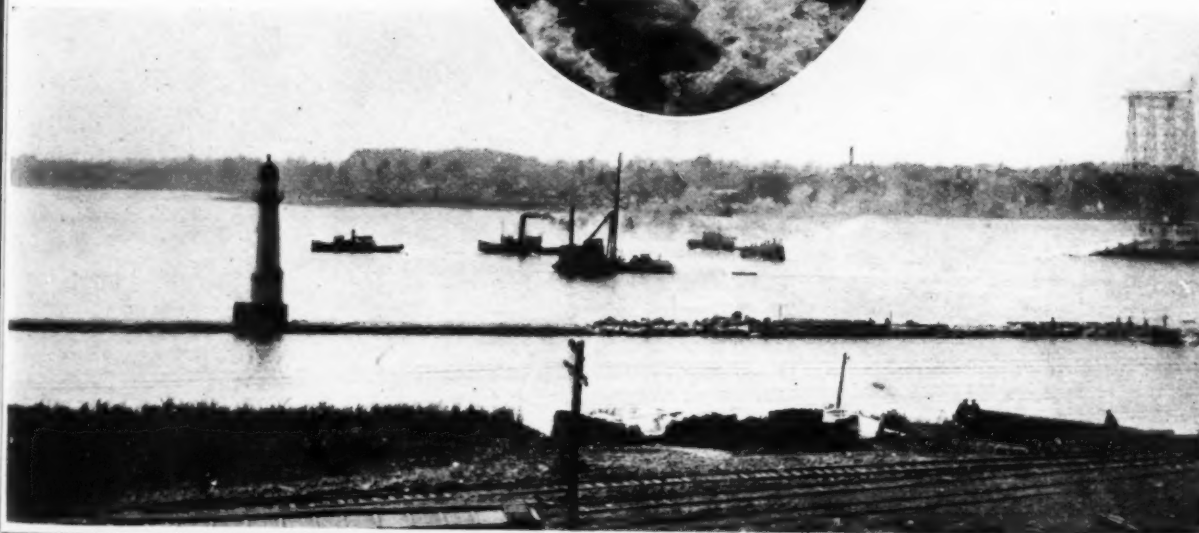
next month. It is a steel structure 4,148 ft. long, including the approaches. It consists of 5 arches over the river and a steel truss 360 ft. long over the Black Rock Canal.



Above—Breaking ground for the Peace Bridge on the Canadian side. This ceremony took place on Aug. 17, 1925, and the Ingersoll-Rand portable compressor shown was one of the chief actors



At left—The swiftness of the current added greatly to the difficulty of constructing the bridge. This picture shows the west shoulder of Pier No. 3 and gives a good idea of the surging of the water



At left — Attempts were made to break the current by sinking a nosing crib. This method failed, and the crib is shown as it broke away Sept. 10, 1925

# CANADA BLUE BOOK U. S. A.

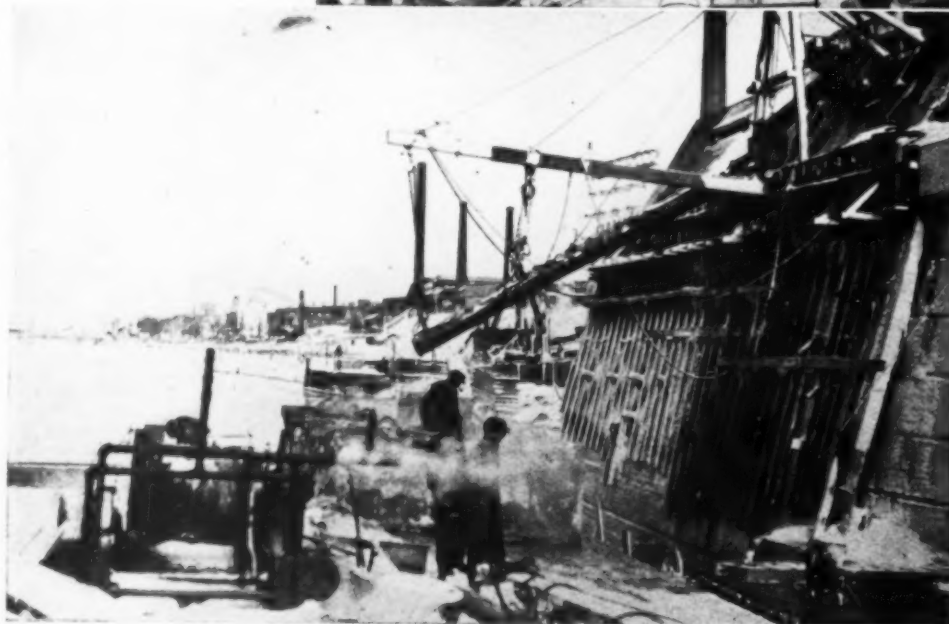
HAMILTON LAKES ONTARIO  
LAKES ERIE BRIDGE BUFFALO

## International Peace Bridge Across Niagara River Buffalo, N. Y., to Fort Erie, Ont.



At left—The timber crib for Pier No. 3 was built on the Fort Erie side of the river and is shown just as it was launched on Dec. 12, 1925. It was then pulled into position with the aid of a winding scow

At right — The caisson for Pier No. 3 being pulled into position at 10 a.m. on Dec. 15, 1925

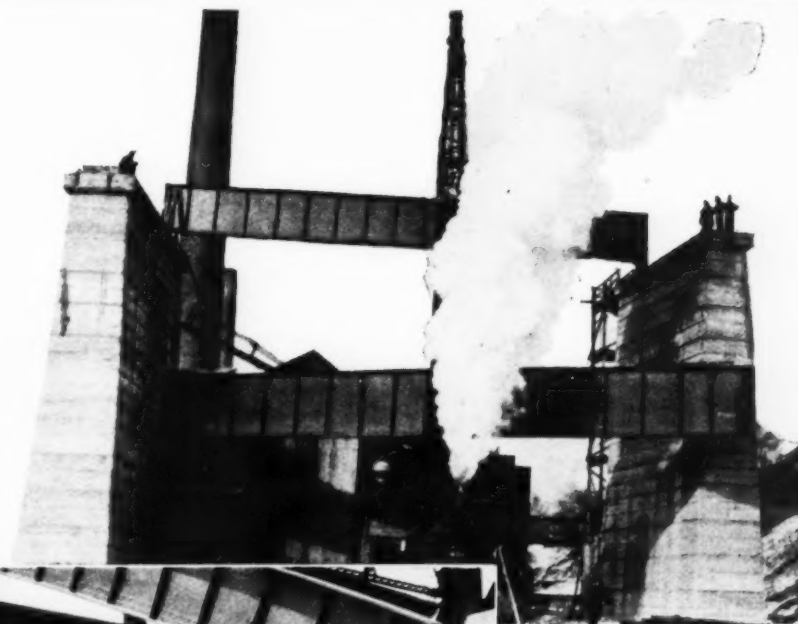


At left—A month later, on Jan. 12, 1926, concreting operations on Pier No. 3 were under way. The concreting plant is shown filling buckets on the winding scow

# CANADA BLUE BOOK U. S. A.

## International Peace Bridge Across Niagara River Buffalo, N. Y., to Fort Erie, Ont.

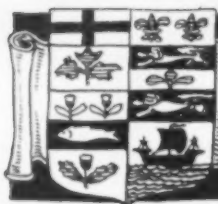
At right — Heavy girders were used in constructing the approaches. A crane is shown here lifting the south girder of one of the spans into place after the north girder was already in position



At left — The false work was supported on steel cages which were set in the rock on the river bed

At right — A photograph of the bridge taken Dec. 18, 1926, showing the erection of steel under way

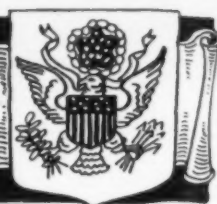




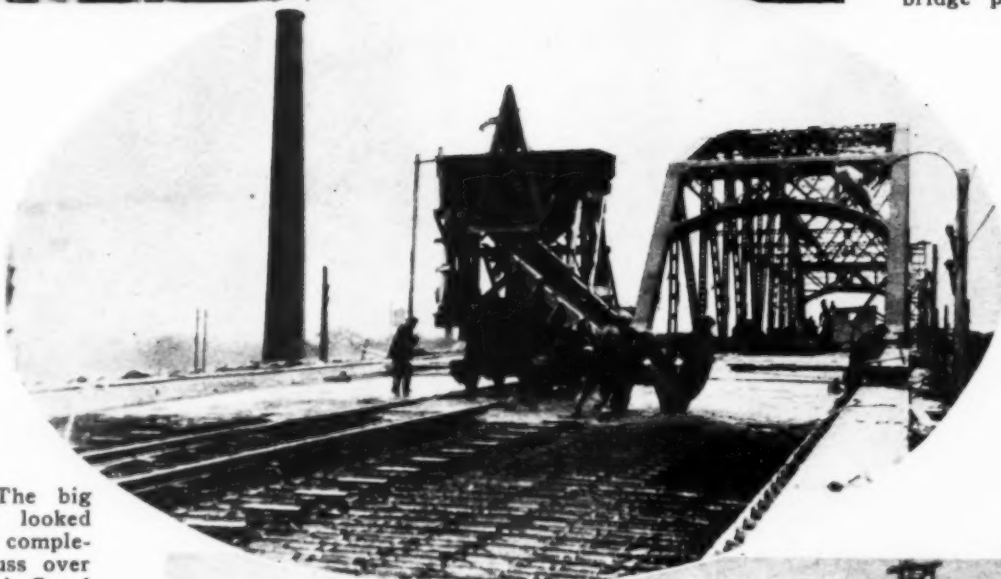
# BLUE



# BOOK



At left—The building of the bridge made it necessary to evacuate Fort Porter, an old army post on the American side. The soldiers marched out on June 28, 1926

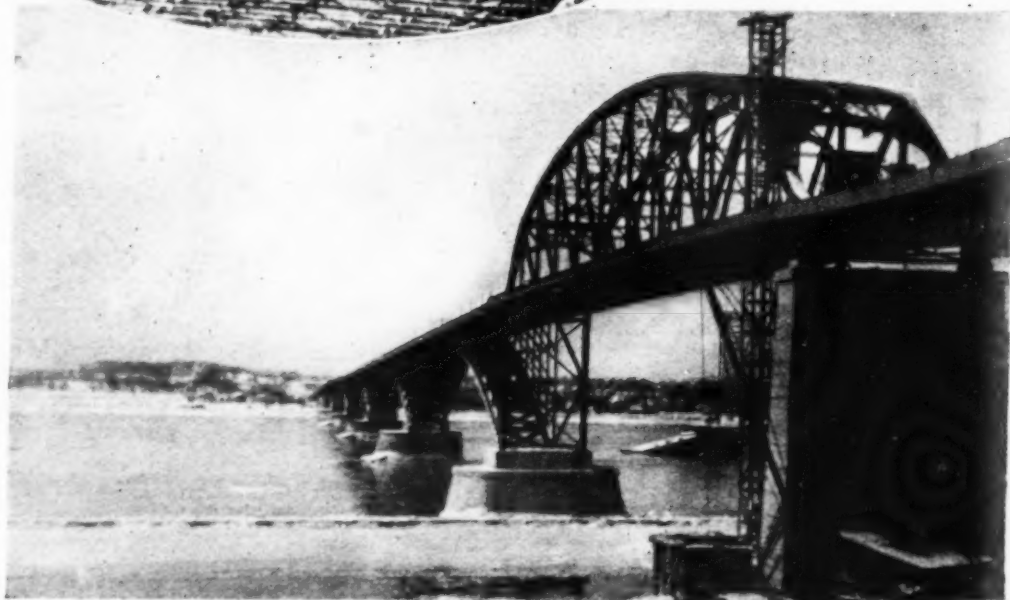


In oval—Pouring concrete for the bridge pavement

Peace Bridge  
Across  
Niagara River

Buffalo, N. Y.  
to  
Fort Erie, Ont.

At right — The big bridge as it looked when nearing completion. The truss over the Black Rock Canal is in the foreground



*The International Peace Bridge which will carry vehicular traffic is being built by the Buffalo & Fort Erie Public Bridge Co. Edward P. Lupfer of Buffalo is chief engineer in general charge of the work. The substructure was built by J. P. and R. B. Porter of Ottawa. The steel was furnished by the Bethlehem Steel Co., and the floor and balustrade constructed by R. B. Porter & Son.*

# Asphalt Roads Are Popular in Japan

Nearly All Paved Highways Have Concrete Base  
With Bitulithic Surface

AS SOON as the February issue of *Construction Methods* reached Japan, one of its large group of readers in that country sat right down and wrote a letter pointing out that on page 19 of the February issue, a picture was published of a Koehring paver which was described as laying many miles of concrete pavement in Japan, which statement was not entirely correct.

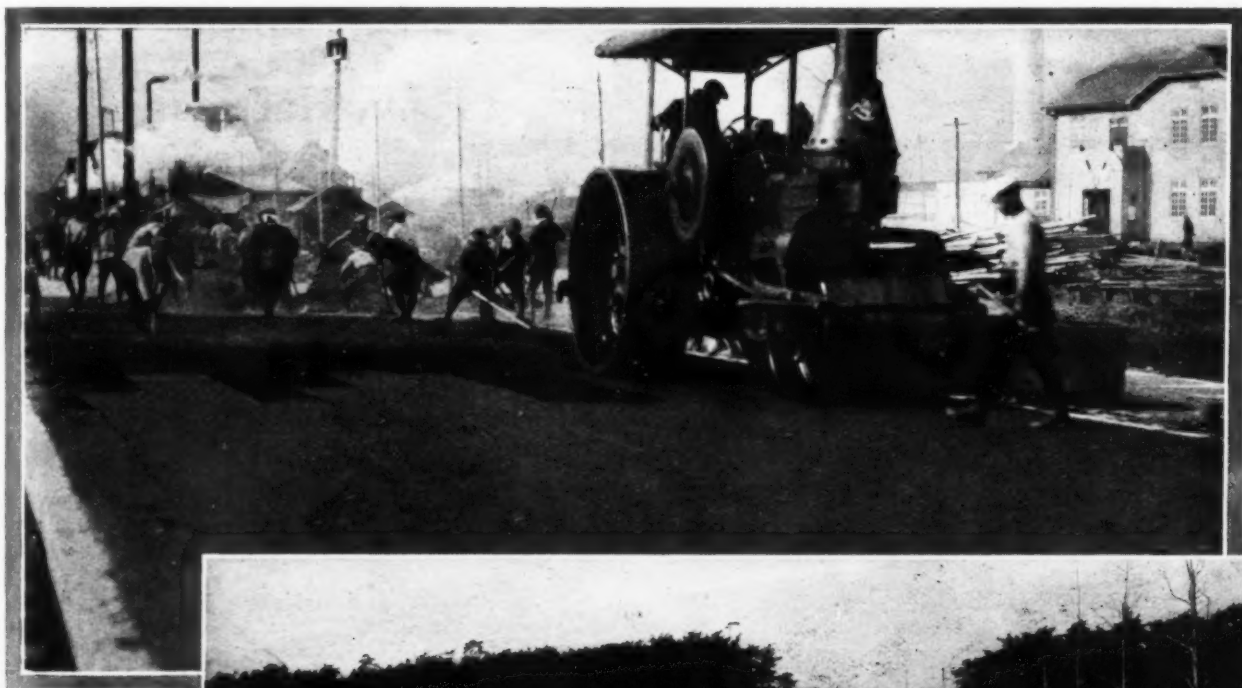
The reader who sent this information is A. S. Hadley, representative of Warren Bros. Co. in Japan, and he points out that the road shown in the February issue consisted of a concrete base which later was covered with a 2-in. surface of Warrenite-Bitulithic asphalt. The two photographs at the bottom of this page were sent by Mr. Hadley and show the road after the surface had been laid.

This new highway is known as the "Hanshin Kokudo" and connects Osaka and Kobe, Japan. Both Koehring and Multi-

Foot pavers were employed on this section of the road in laying the concrete base and they were followed up by the men who laid the asphalt surface. The Nippon Oil Co., paving contractors of Japan, had the contract for building this road. A concrete base covered by a thin asphalt surface is a common type of road in Japan.

This magazine always is glad to correct any errors which it may make and takes pleasure in printing this correction sent in by Mr. Hadley. Mr. Hadley very kindly wrote some captions on the backs of the photographs which he sent with his letter of correction, but as they are written in Japanese they were not quite so easy to understand as if they had been in English. They, therefore, are reproduced beside the photographs on this page so that no reader can complain of any lack of information in regard to this job. They also furnish a bit of Oriental atmosphere.

A Buffalo gasoline roller working on a 2-in. asphalt surface on the road between Osaka and Kobe. The lower picture shows a section of the finished road



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今津市 70 号  
東 中 西 へ



昭和九年十二月二十九日(日)  
武蔵野線 西 中 西 へ

# Thick Ice Aids in

**T**HE work of laying 2,200 ft. of cast iron pipe 20 in. in diameter on the bottom of Lake Antoine near Iron Mountain, Mich., was greatly simplified recently by lowering the pipe through the ice which completely covered the lake during the winter months. The job was planned by F. W. Hartmann, City Engineer of Iron Mountain, and was part of the improvement of the city's water supply.

The job was done in the winter in order to utilize the strength of the ice which was about 38 in. thick. The entire pipe was laid on the ice supported on cribs built at intervals of 36 ft. Slings of cable were then attached to the line at each set of cribs. Threaded rods were hooked to the slings and extended through steel bearing plates and ordinary nuts. By the simple process of turning the nuts, the pipe was lowered through a trench cut in the ice directly beneath the line. It was possible by this method to lower about 1,000 ft. of pipe at once.

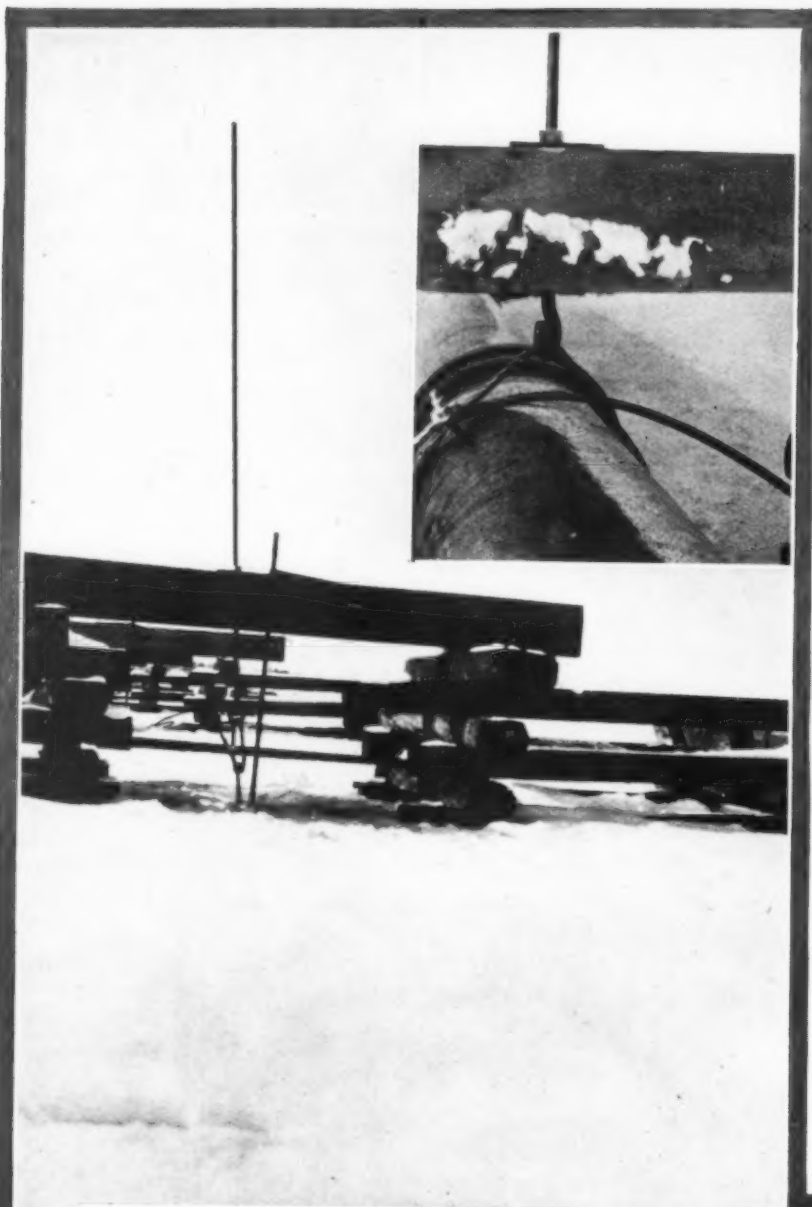
During the time the work was going on, the average temperature was 18 deg. below zero. The lowest temperature recorded was 28 deg. below and at no time did the thermometer get above zero for more than an hour or two. In spite of this handicap, the work was completed

**F. W. Hartmann**

*City Engineer*

**Iron Mountain, Michigan**

Wins first prize of \$25.00 in May Photographic Contest for these pictures



# ds in Laying Pipe

without any serious accidents due largely to the fact that the men kept a sharp lookout for frozen noses.

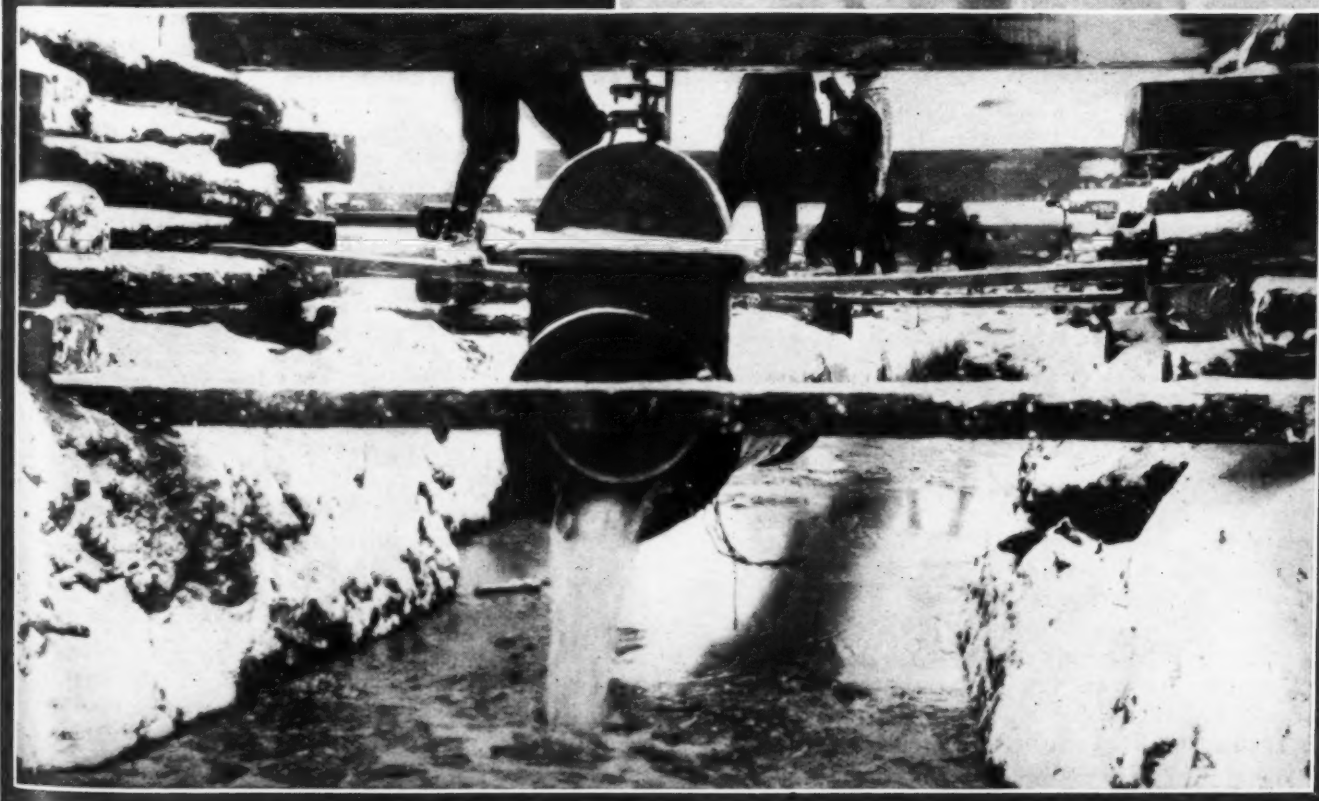
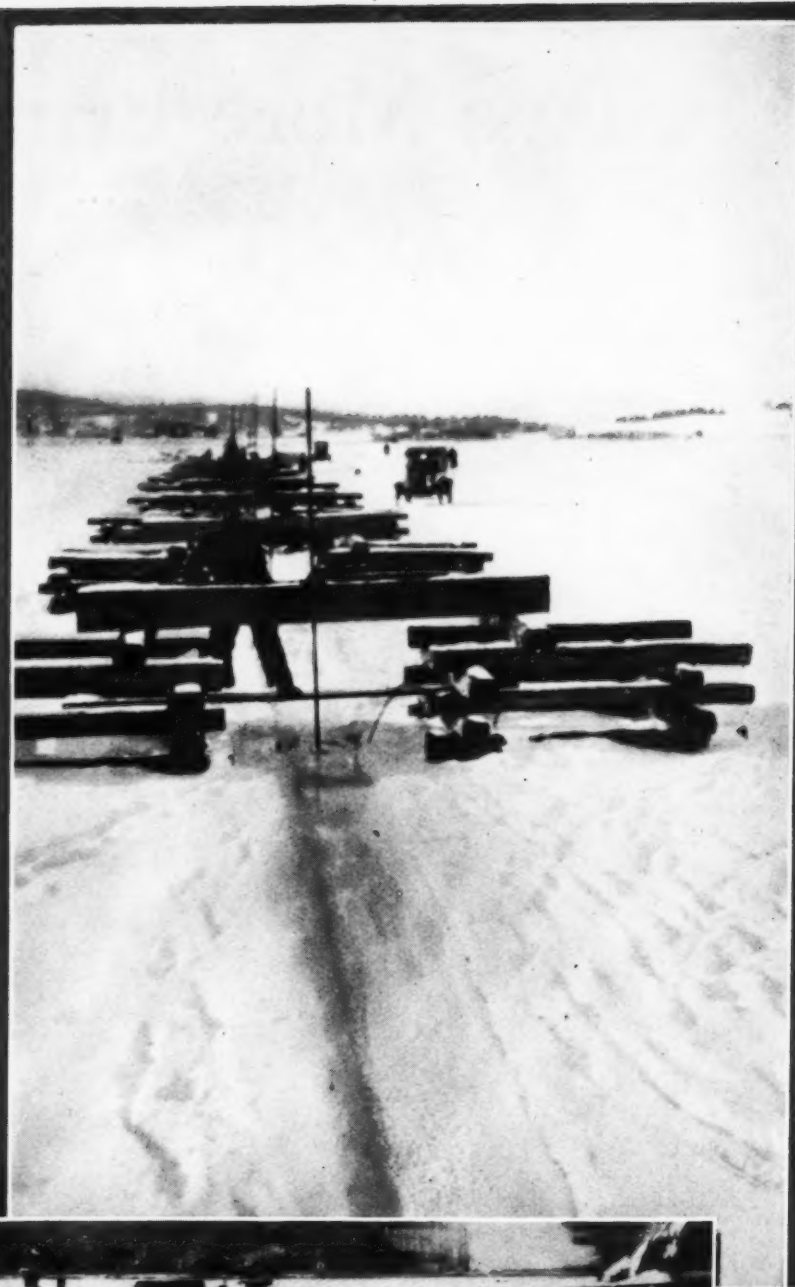
As the pipe was lowered to the extremity of the first rods, second rods were placed in position and hooked to an extension of the sling. One of the pictures on the opposite page shows one of the cables with the second rod hooked on to take the place of the first rod.

In order to facilitate the work, enough water was admitted to the intake pipe as it was lowered to overcome the buoyancy of the empty pipe, which, in the case of a pipe of this size, was sufficient to cause the pipe to float when just barely submerged. The amount of water admitted during lowering was regulated so as not to put too great a weight on the lowering rods.

The shore end of the intake pipe was laid in a deep ditch which was dug during typical winter weather, a Northwest dragline doing some of the heavy work. The intense cold made this part of the work a difficult job.

The contractors on this job were the Phelps Drake Co., Inc., of Minneapolis. Mr. Hartmann, who supervised the work for the city, took all of the accompanying photographs and entered them in the May photographic contest.

Various steps in the process of lowering a 20-in. pipe through the ice are shown in the photographs, including details of the method of attaching the iron rods and supporting the pipe by cribs. Water was kept flowing through the pipe as the valve below was being lowered



# Two More Prize Winners

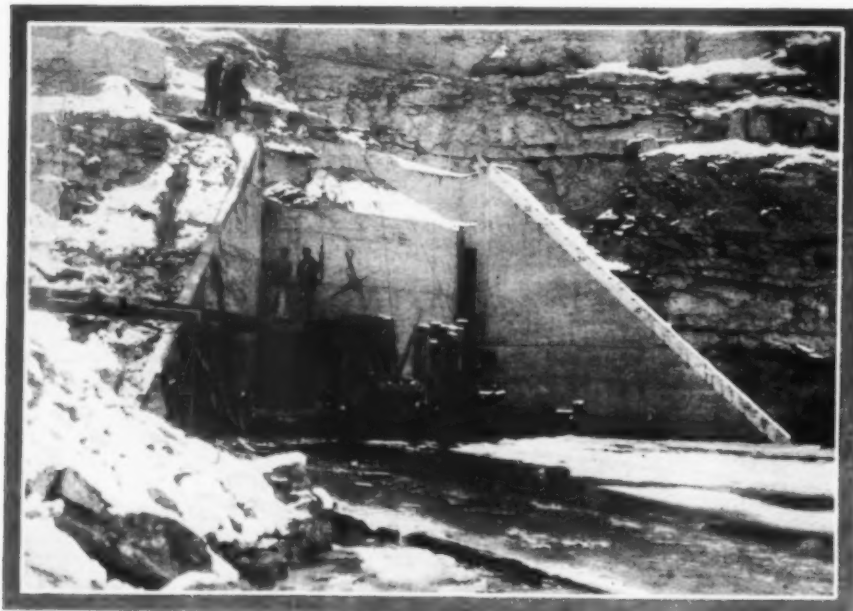
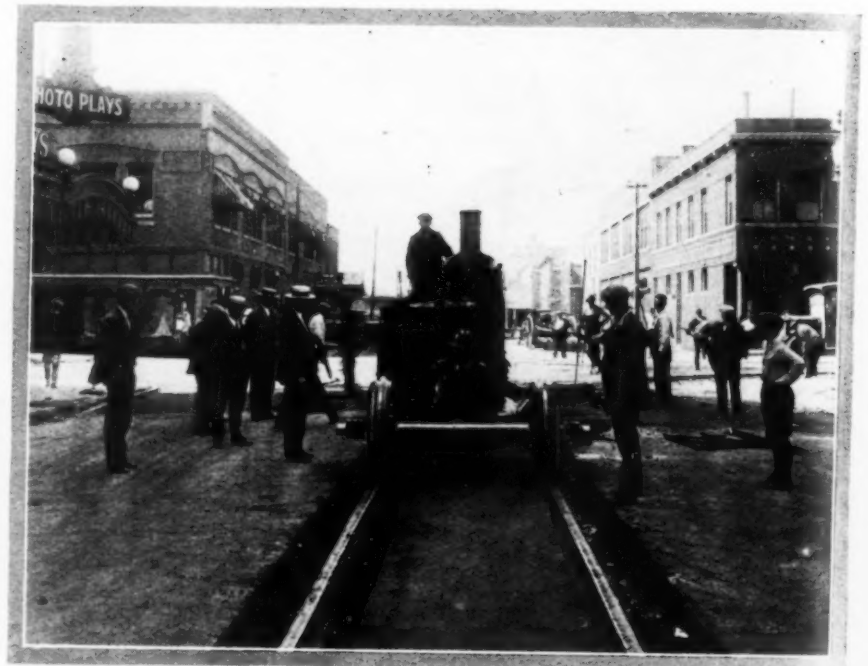
## Thomas Stevenson

*Superintendent, Midland Contracting Co.,*

### Midland, Michigan

Wins Second Prize of \$15.00

**A**N unusual method of laying asphalt pavement between car tracks has been adopted by the Midland Contracting Co. of Midland, Mich., which has done a considerable mileage of such work in Saginaw. The picture illustrates the way in which two heavy wheels mounted on an axle are used to keep the asphalt clear from the rails.



## F. F. Smith

*Resident Engineer, Bureau of Reclamation*

### Guernsey, Wyoming

Wins Third Prize of \$10.00

**D**URING the building of the Guernsey Dam a diversion tunnel was used as a by-pass for the North Platte River. The closure of this tunnel is shown. A concrete arch plug was poured over the tunnel opening, and the river flow at low stage was allowed to pass under this arch. Two wooden shutter gates hung on one cable were installed. When the portal was closed the cable was severed, and the gates were forced to their seats by being weighted with about 500 lb. of railroad steel. Clay was later sluiced in front of the gates to close off all seepage.

## Here's a Chance to Make Your Camera Earn Its Keep

**W**E are still in the market for prize photographs, and every reader who owns a camera is urged to enter the June competition. We want pictures that will show how you are handling your job and which will give your fellow construction men useful hints in regard to their own work. Don't forget that three prizes are awarded each month and that everybody has a chance. As usual, first prize is \$25.00 for the picture best suited to the needs of *Construction Methods*, the second prize is \$15.00, and the third prize is \$10.00. Dust off your camera, and see if it won't

earn some money for you. Vacation time is almost here and a little extra cash will come in handy.

The conditions remain as before. The photographs must be taken by a man actually employed on the job and should be sent to *Construction Methods*, Tenth Avenue at Thirty-sixth Street, New York City, by Wednesday, May 11, and plainly marked Photographic Contest. Photographs received after that date will be entered in the July contest. *Construction Methods* will pay for all non-prize-winning photographs which it uses.

## A Roadside Crushing Plant in Oregon



This crushing plant is being operated at Carver, Oregon, on county road work. It has a capacity of 150 to 250 yd. of base course rock per day. Because of the fact that the quarry rock breaks in large pieces, it is necessary to set up two

crushers. A large Traylor jaw crusher receives the rock direct from the quarry. It then goes up the elevator to the screens and the oversize is returned to a Symonds disc crusher. The plant is being operated by a Nelsico 125-hp. Diesel engine.



PAUL L. HOLLAND AND  
HIS PIPE

# Resort Lake Made to Order

Million Dollar Dam  
Built in North Carolina  
Mountains  
as Part of Hotel and  
Cottage Development

tral feature of a resort development of 8,500 acres and is on the Rocky Broad River.

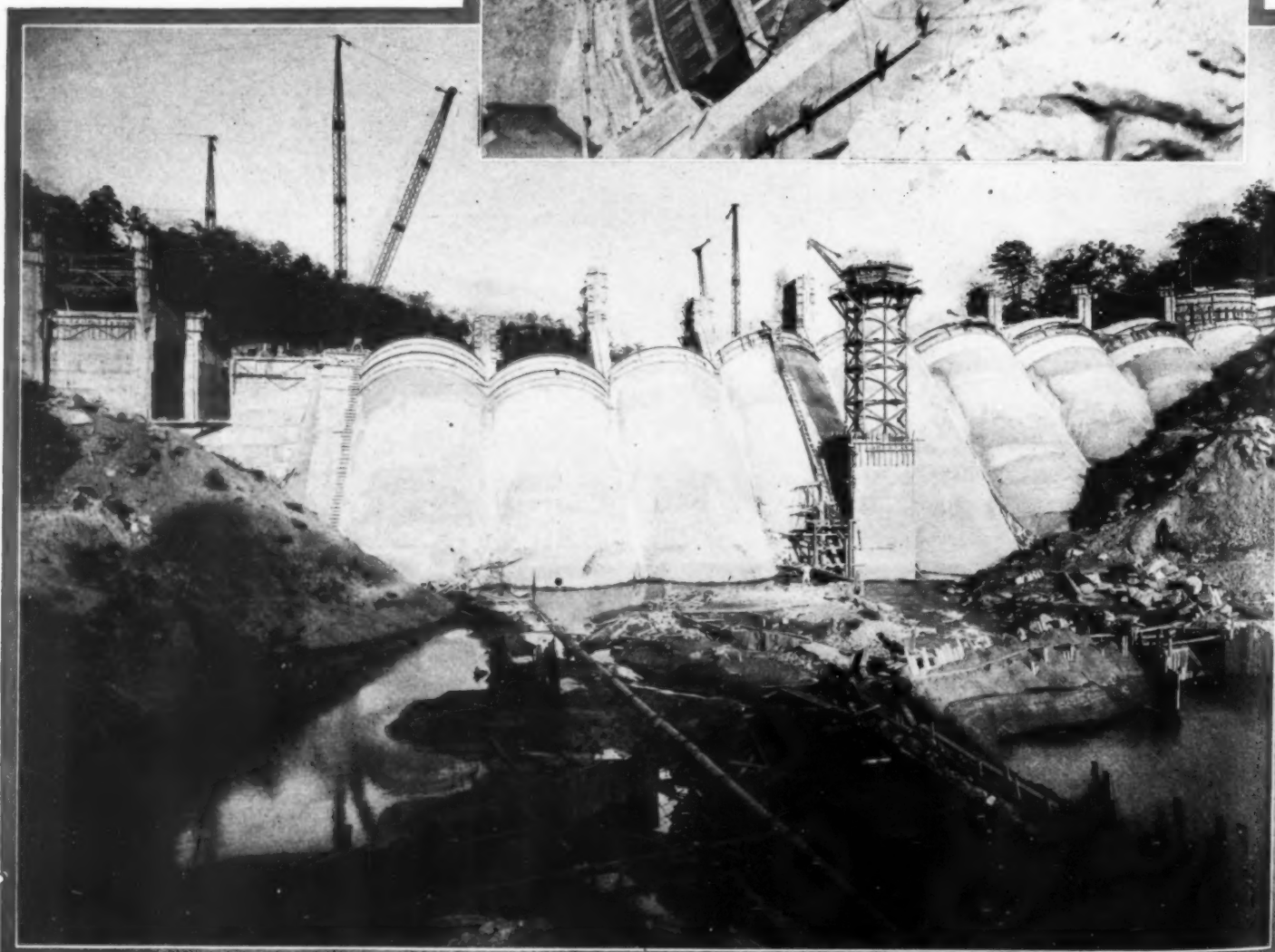
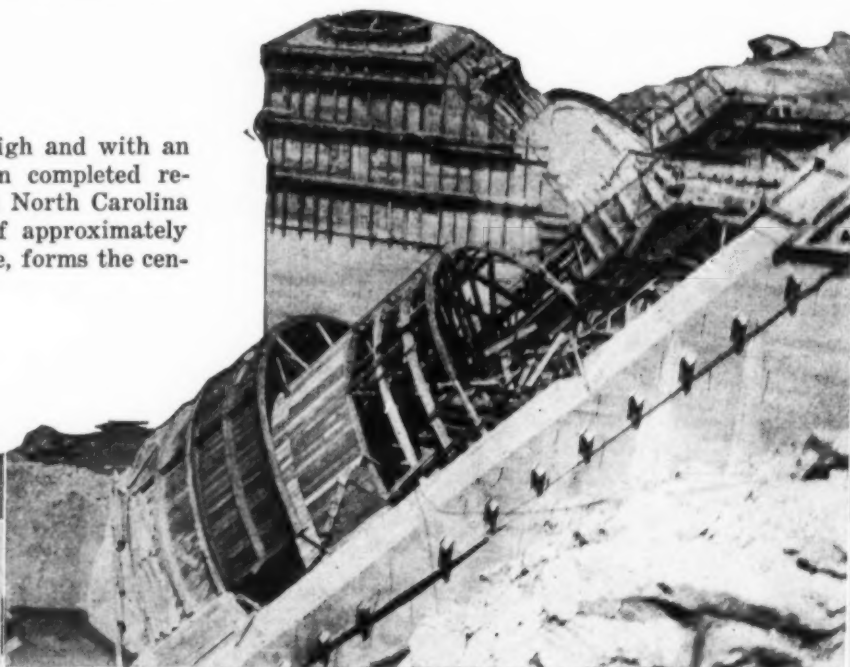
The dam was designed by Messrs. Mees and Mees, consulting engineers of Charlotte, N. C. and was built under the supervision of the Clement-Dunavant Company, general contractors of that city.

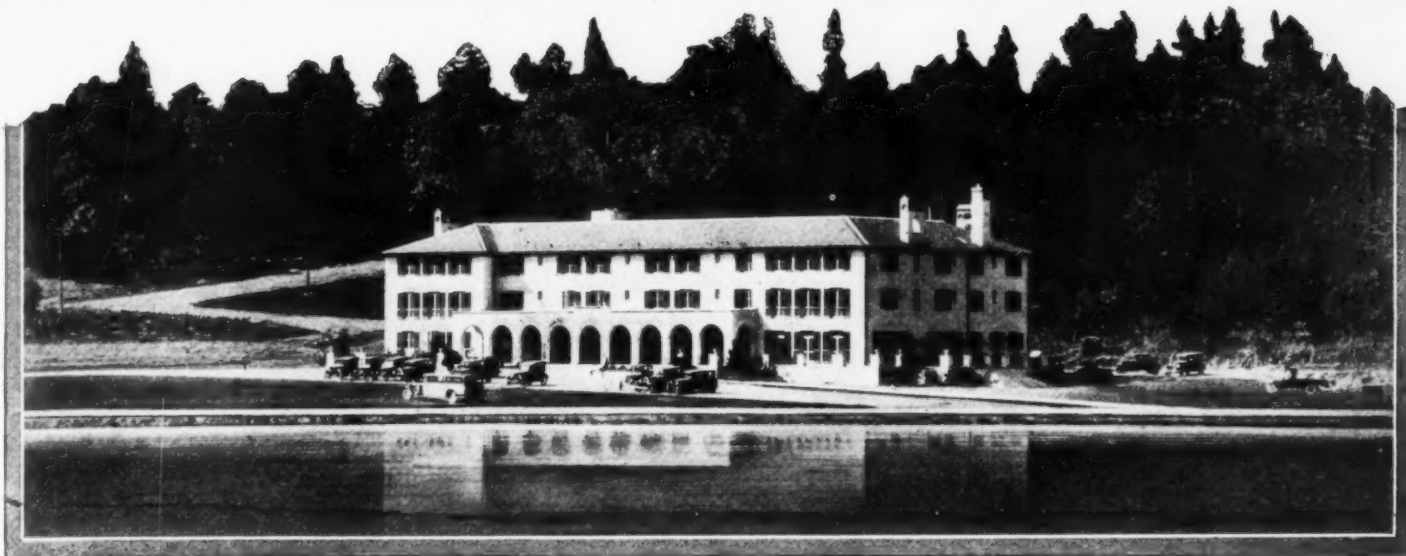
The site is 13 miles from the nearest railroad. It was essential, therefore, to reduce to a minimum the tonnage of materials which had to be imported. This was accomplished in two ways: first, by the type of structure built; second,

**A** COMPRESSION arch dam, 104 ft. high and with an overall length of 585 ft., has been completed recently in the mountains of Western North Carolina to create a lake with a superficial area of approximately 1,500 acres. This lake, known as Lake Lure, forms the cen-

At right—Inside and outside arch forms. The ends of pieces of channels built into the buttress provide a skidway for inner arch form

Below—Upstream view of dam when about 75 per cent completed





Inn at head of Lake Lure

by the fact that excellent rock and sand for the concrete were found directly below the site.

The ledge granite on which the dam stands extends above and below the site. This was quarried from openings made below the dam. The excavated rock was delivered to a No. 5 Allis-Chalmers gyratory crusher in a plant about 600 ft. downstream. The output from this crusher passed through a revolving screen to a belt conveyor. The rejects from this screen returned through a No. 3 Allis-Chalmers crusher which also delivered to the conveyor.

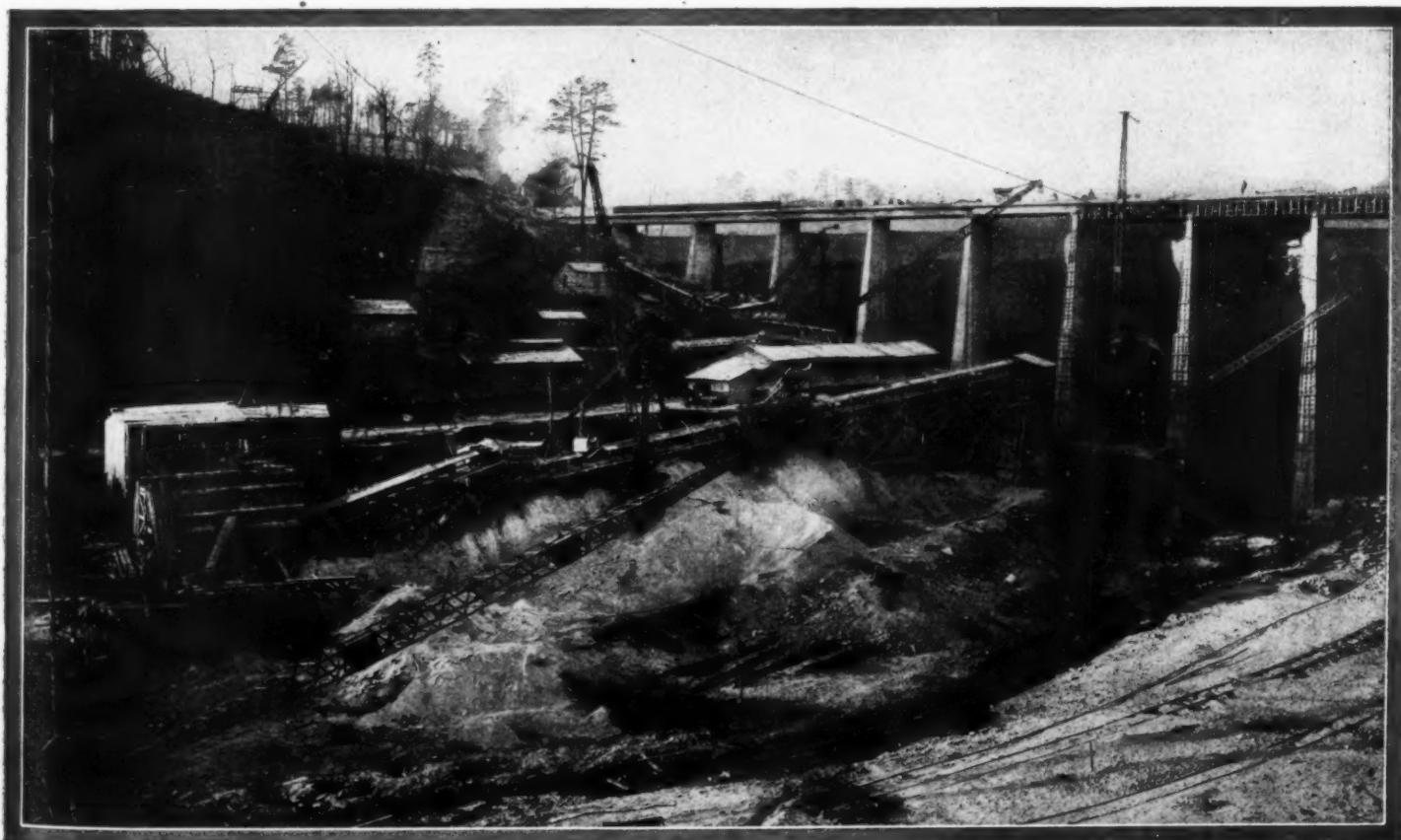
This conveyor was arranged so that it could deliver to a bin over a mixing plant just below the dam, or to stock piles. From the stock piles the crushed stone was reclaimed by a 1-yd. Hayward bucket on a guyed Lidgerwood steel

derrick to a bin feeding the conveyor. This derrick also unloaded all the sand for the job from cars to stock piles, or directly to the conveyor. This unit handled a total of over 35,000 cu.yd. and was in prime shape at the end of the job.

The mixing plant contained a 1-yd. Smith tilting drum mixer. The cement was delivered by motor trucks to a storage house on the hillside above the plant. Delivery was made from this house to the charging floor by gravity. Stone and sand bins over the mixer also delivered these materials to the mixer by gravity. All of the sand was passed through a Blaw-Knox inundator under the sand bins.

The mixer discharged into 1-yd. Steubner buckets in which the concrete was delivered to place by guyed steel derricks. The latter also removed all the spoil from the

Downstream face of dam under construction. The concrete mixing plant is at the left and the crushing and screening plant is at the right. The conveyor which handled the materials may be plainly seen



excavation, handled forms, and performed various other services.

As may be seen from the photographs, the arches of the dam are at an angle of 45 deg. from the horizontal. Taking advantage of this design, the contractor worked out an effective method of forms for the arches. In general, this method is similar to the forms used on cylindrical bins for grain elevators.

Each form consisted of an outside and inside sector, as shown in one of the pictures. These were first set up at the bottom on the buttresses carrying the arch. As soon as practicable after the section was poured, the inside form was lowered slightly by means of a set of small jacks built into the ends of the steel ribs of the form. Then the form was simply skidded up to the next level by means of a line on one of the derricks.

Steel channels placed in the face of the buttress, as shown in one of the pictures, provided a skidway at each end of the form. When the new position was reached, the jacks were run up enough to seat the form correctly.

The outside form rested merely on the face of the buttress. It was lifted to its new position each time by one of the derricks. This scheme of handling forms eliminated all shoring. It also permitted the forms to be used repeatedly. In fact, forms used on this job were previously used on another dam of the same design built in this vicinity. At the end of this second job they also looked good for much more service.

Paul L. Holland represents jointly the Chimney Rock Mountains, Inc., owners of the development, and Messrs. Mees and Mees, as engineer on the job. George Sibley was general superintendent for the contractors.

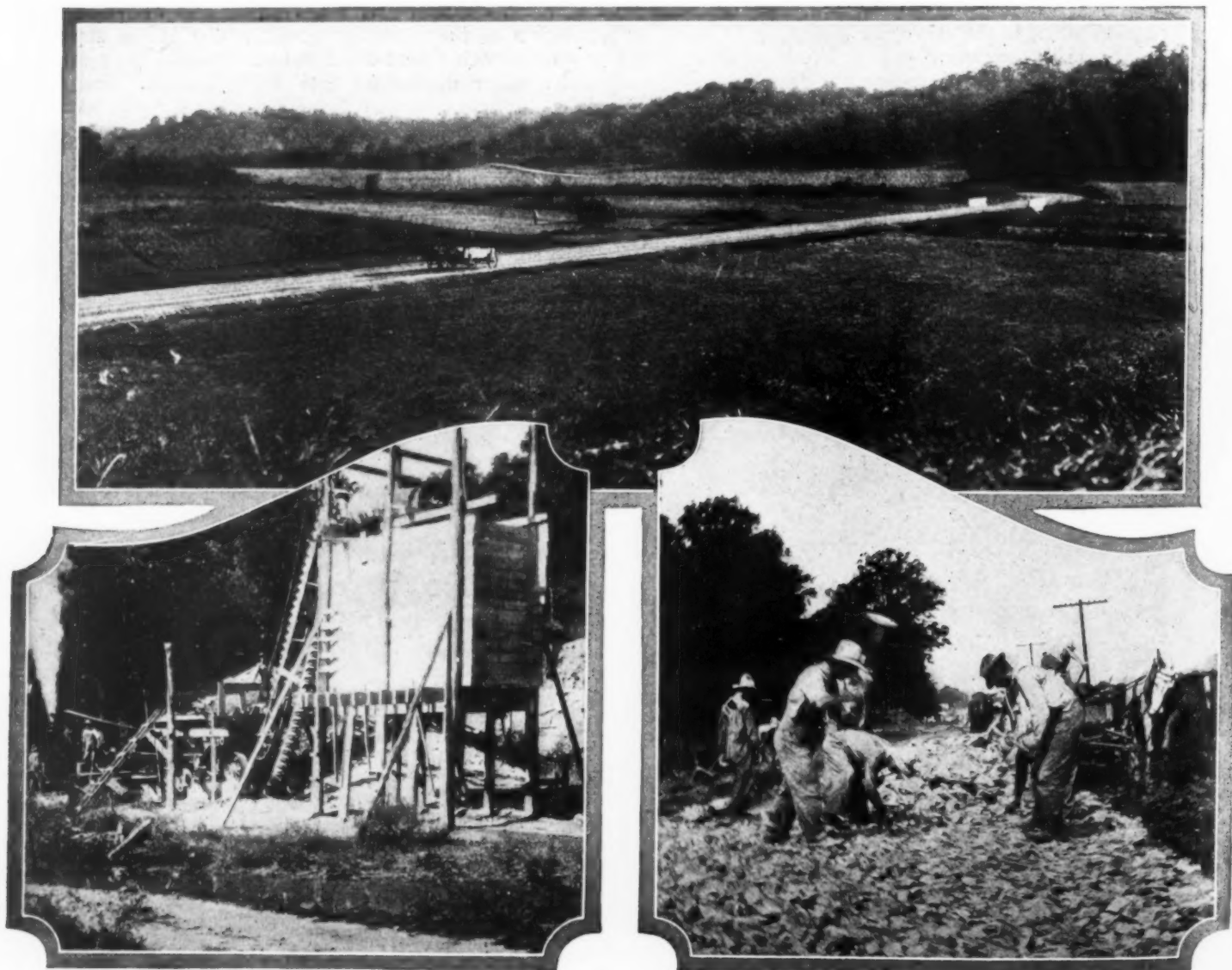
## Indiana Builds a Short Cut

**F**OR the last three years Indiana has been working on a 30-mile stretch of road through a section of the state where highway development has lagged. This road provides a short cut for travel between Louisville, Ky., and Evansville, Ind. The excavation averaged 10,000 yd. to the mile. In the base and top courses 120,000 yd. of stone were used. Eight single-span bridges were built.

The foundation of the road is clay and rock and the base

is 6 in. thick consisting of 6x10 stone laid on edge and broken. The second course is 3½ in. of 3-in. rock, and the top course is 2½ in. of 1½-in. rock. The work has been done under the supervision of F. A. Henning, District Engineer of French Lick.

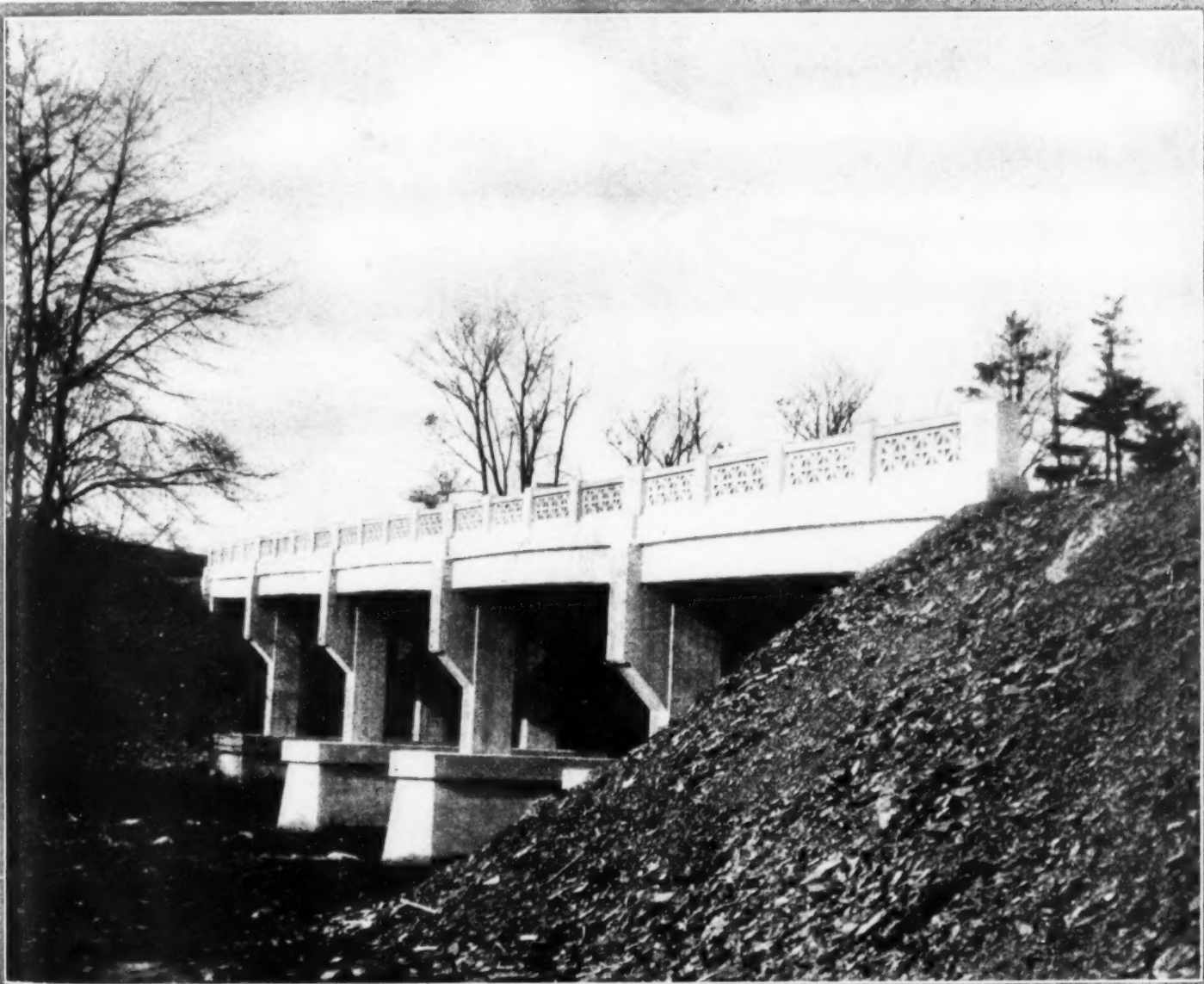
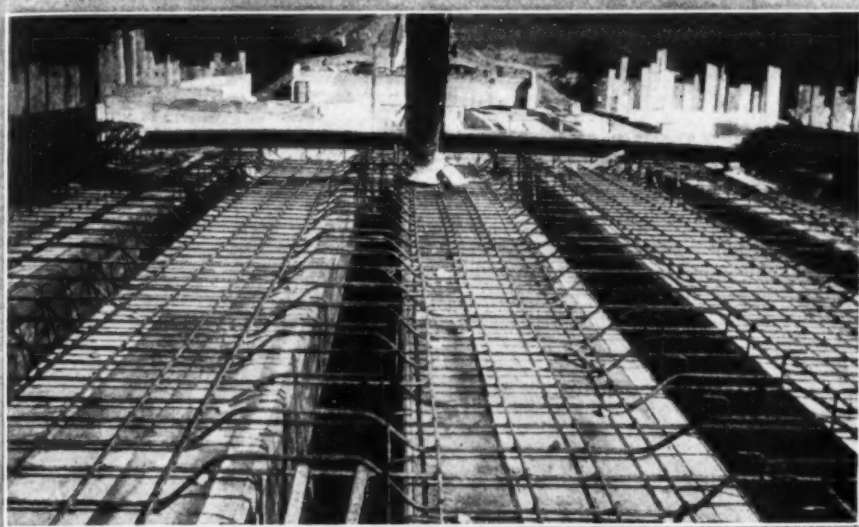
A section of the completed road is shown below, as well as a stone crusher and men at work laying the modified Telford base.



# A Concrete Bridge from Pennsylvania

Various details of concrete bridge construction are shown on this page. The photographs were taken by George A. McChesney, an assistant engineer in the Pennsylvania Department of Highways, and gives a good idea of the careful way

in which the job was handled. They show the steel reinforcing in place ready for the concrete, the handling of a section of the balustrade and the finished bridge. It is a typical example of a modern concrete highway bridge



# Confidence

FRANCIS A. CANUSO & SON  
GENERAL CONTRACTORS  
AND ENGINEERS  
PHILADELPHIA, PA.

Giles & Ransome,  
231 N. 12th St., Philadelphia, Pa.  
Gentlemen:—

Having given the Ransome 27-E Paver a test we found we were able to lay 540 cu. yd. of concrete in 12 hrs. and are satisfied with the wonderful results. It is an excellent piece of machinery which gives entire service and satisfaction and we feel safe in recommending the RANSOME 27-E to any contractor who is in the market looking for a good Paver.

Very truly yours,

FRANCIS A. CANUSO & SON.

No. 1 of a Series expressing "Confidence" by users of Ransome concrete machinery.



**P**ERFECT confidence is necessary — on the part of horse and rider — to perform a stunt like this.

Contractors who have used the Ransome 27-E Paver can "feel safe in recommending" it to others.

For back of this paver is the name "Ransome" — which for 77 years has stood for quality in making concrete machinery and equipment.

## Ransome Concrete Machinery Co.

1850—SERVICE FOR 77 YEARS—1927

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NEW JERSEY

# Confidence

**27-E** Ransome  
Master  
Paver



## Performance Counts — Not Mere Promises

OVER 95% of those who own a Ransome Extra Heavy Paver bought another Ransome when in the market again.

Ransome has not found it necessary to make radical

changes in design in the 27-E Paver this year.

Why buy merely on the basis of promises—when you can ask any owner of a Ransome 27-E how it has performed?

Write for a bulletin

# RANSOME

### RANSOME DOMESTIC REPRESENTATIVES

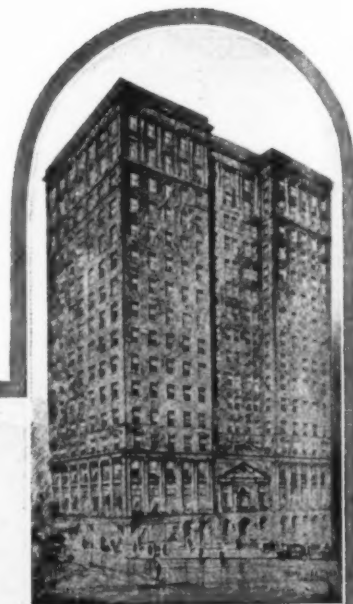
ALBANY, N. Y. Super Supply Co., Inc.  
ASHEVILLE, N. C. North State Culvert & Machinery Co.  
ASTATULA, Fla. Prescott Machinery Co.  
ATLANTA, Ga. Henry O. Williams  
BALTIMORE, Md. Giles & Ransome  
BIRMINGHAM, Ala. Smith-Meadow Supply Co., Inc.  
BOSTON, Mass. The Clark-Wilcox Co.  
BROOKLYN, N. Y. John P. Fitzgerald  
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CHATTANOOGA, Tenn. Connor Sales Company  
CHICAGO, Ill. Ransome Concrete Machinery Co.  
CLEVELAND, Ohio. E. F. Fogg Co.  
COLUMBIA, S. C. Fred D. Marshall, Inc.  
COLUMBUS, Ohio. John McNelly  
DALLAS, Texas. J. W. Bartholow Co.  
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DENVER, Colo. Clinton & Held Co.  
DETROIT, Mich. W. H. Anderson Tool & Supply Co.  
EL PASO, Texas. Roe L. Johnson  
HUNTINGTON, W. Va. Banks Miller Supply Co.  
JACKSONVILLE, Fla. Stanley & Gill Machinery Co.  
LOS ANGELES, Cal. Ewck & Co.  
MEMPHIS, Tenn. Pulgon Thomas Iron Co.  
MINNEAPOLIS, Minn. Wm. H. Hale & Co.  
MOBILE, Ala. Lawrence-Gooding Co., Inc.  
MONTREAL, Canada. Canadian Equipment Co.  
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NEWARK, N. J. Johnson & Deussen, Inc.  
NEW HAVEN, Conn. The Clark-Wilcox Co.  
NEW ORLEANS, La. Ole E. Olsen  
NEW YORK, N. Y. Fitzgerald & Hughes  
NORTHPORT, N. Y. F. G. MacDonald  
PHILADELPHIA, Pa. Giles & Ransome  
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ROCKFORD, Ill. Swartz Bros. Co.  
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SEATTLE, Wash. Washington Machinery & Storage Co.  
SPOKANE, Wash. General Machinery Co.  
SPRING LAKE, Mich. W. H. Anderson Tool & Supply Co.  
ST. LOUIS, Mo. Lincoln Equipment and Materials Co., Inc.  
SYRACUSE, N. Y. The Wheeler-Murray Co.  
TAMPA, Fla. Tampa Machinery Co.  
TOLEDO, Ohio. National Supply Co.  
TORONTO, Ontario. Cleve Osburn, Ltd.  
VANCOUVER, B. C. B. C. Equipment Co.



# A Hard Job



At left—The old building put up in 1803, as it looked before moving operation began



At right—The new building as it will be when completed with the facade of the old building as the entrance in the center

The relative position of the old and new structures is shown. The second wing of the new building is now being put up on the site of the old



# Old Inspired by Sentiment

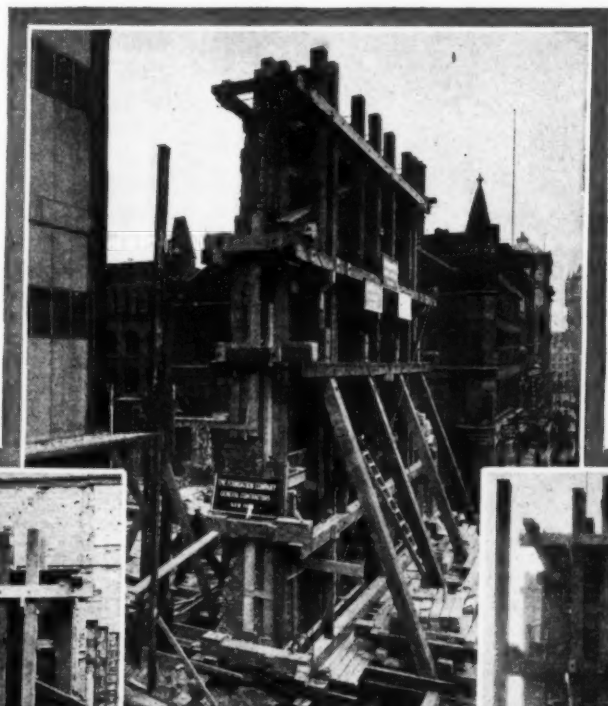
## Albany Bank Moves Facade of Old Building to Form Entrance of Modern Structure

**A** DESIRE to take with them into their new building some tangible reminder of the structure in which their business had been conducted since 1803 caused the directors of the New York State National Bank at Albany to decide, if possible, to utilize the facade of their old building as the main entrance of their new and modern home.

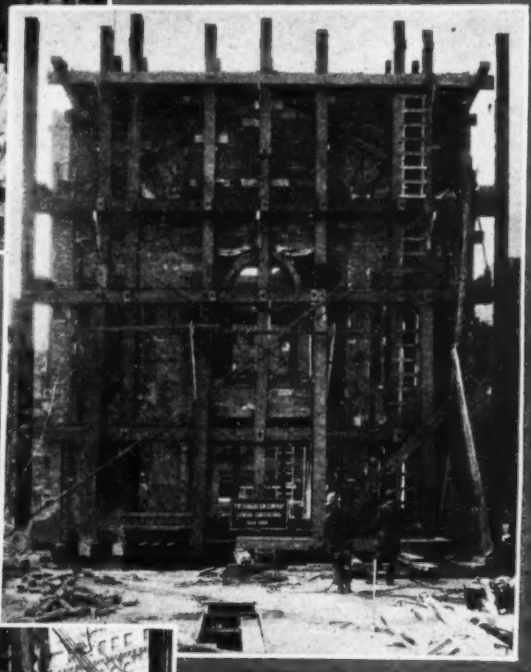
The old building, which has been in continuous use since Sept. 7, 1803, was designed by Philip Hooker, a famous architect of its day. It was built of brownstone from the old Bellview Quarries in New Jersey with paneling of red face brick. The work of moving the facade a distance of 84 ft. was entrusted to the Foundation Co. of New York and after considerable study they handled the job in the following manner.

The entire front of the building was crated with heavy timbers placed on the front and on the back of the wall. These

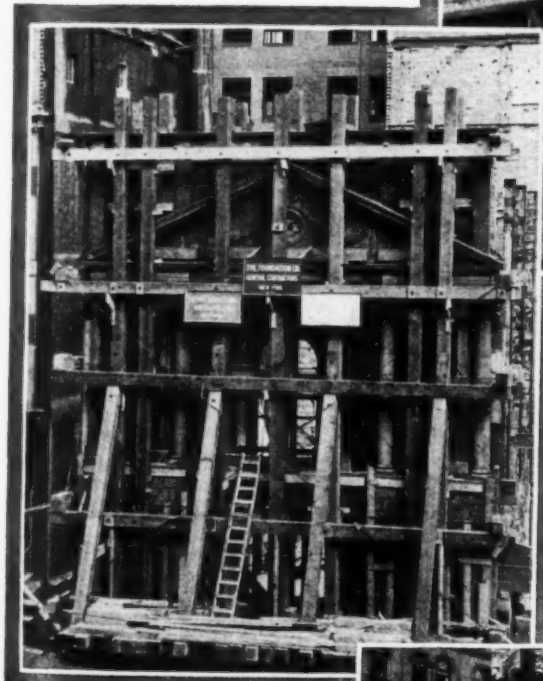
At right—A side view of the old front after it had been crated ready to move



Below—Showing the way in which the crated facade was supported and raised



Above—The old facade taken from the street front



Above—The old facade from the floor of the old building



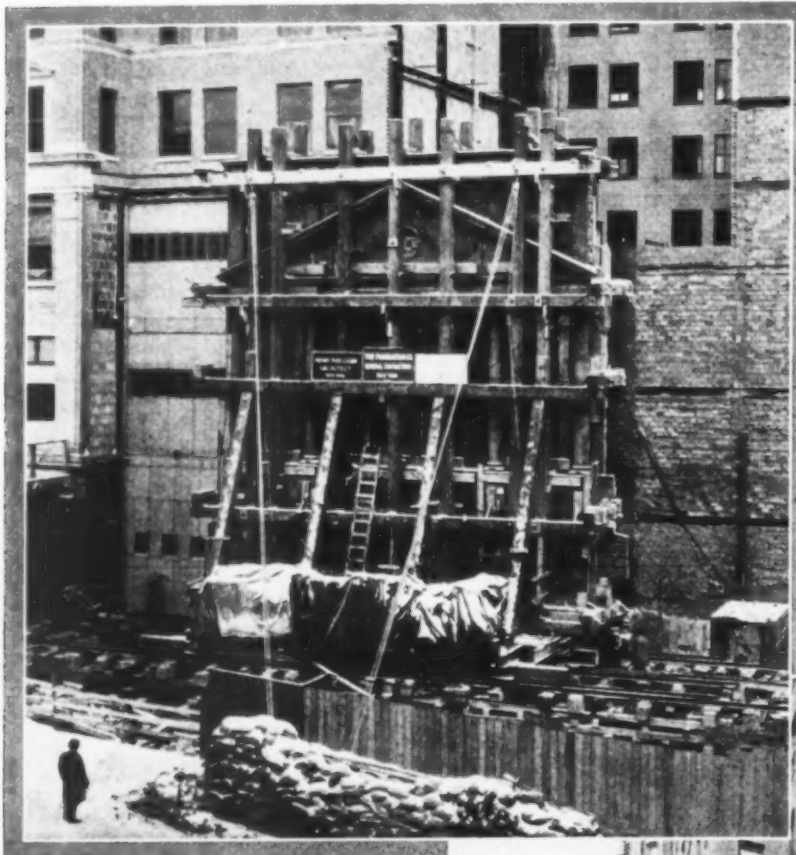
timbers were fastened together by means of bolts drilled directly through the old walls. The timbers were fastened to steel I-beam needles which extended out approximately 10 ft. on either side of the wall. Supporting these needles were longitudinal I-beams bolted together with

spaces where necessary. All this timber work was firmly attached to the masonry and diagonal tie rods and wire guys were placed in such a manner as to prevent cracking of the masonry walls while moving.

A runway was then prepared underneath the building, consisting of 12x12 timber cribbing with 12x12 timber runners placed perfectly level on top. About 100 jackscrews of 150-ton capacity each were then inserted between the horizontal I-beams and the running timbers, and after the adjoining walls had been demolished, the facade was then jacked up approximately 4½ ft. in its entirety. Having lifted the front to slightly more than its required level, a system of steel rollers 2 in. in diameter was installed, and the building allowed to settle gently on to these rollers.

The actual moving operation was performed by means of an ordinary contractor's 2-drum hoist engine. Steel tackle blocks rigged up with six-part lines, the pulling line being carried ahead to a snatch block, then led back to the drum of the engine. Actual moving operations consumed approximately 4 hr., while the work of the timber cribbing and cradling consumed approximately two and one-half weeks.

After the facade was moved and lined up in its final position in the center of the new building the granite underpinning and brickwork was then



Above—During the 4-hr. moving operation. The front of the old building being pulled into position



At right—A side view of the job before the old front was raised

inserted, the whole being grouted in solid up to the underneath side of the old facade. This work was allowed to set for approximately ten days. In the meantime, two steel columns were erected at the rear of the old facade. These were connected to the new steel work on the one end and to

the old facade masonry by means of U-bolts on the other. The brick and stone work, to join the old facade vertically with the new building, was then built, and afterward the entire wood cribbing and cradling was removed. The old facade will do duty for many years to come.

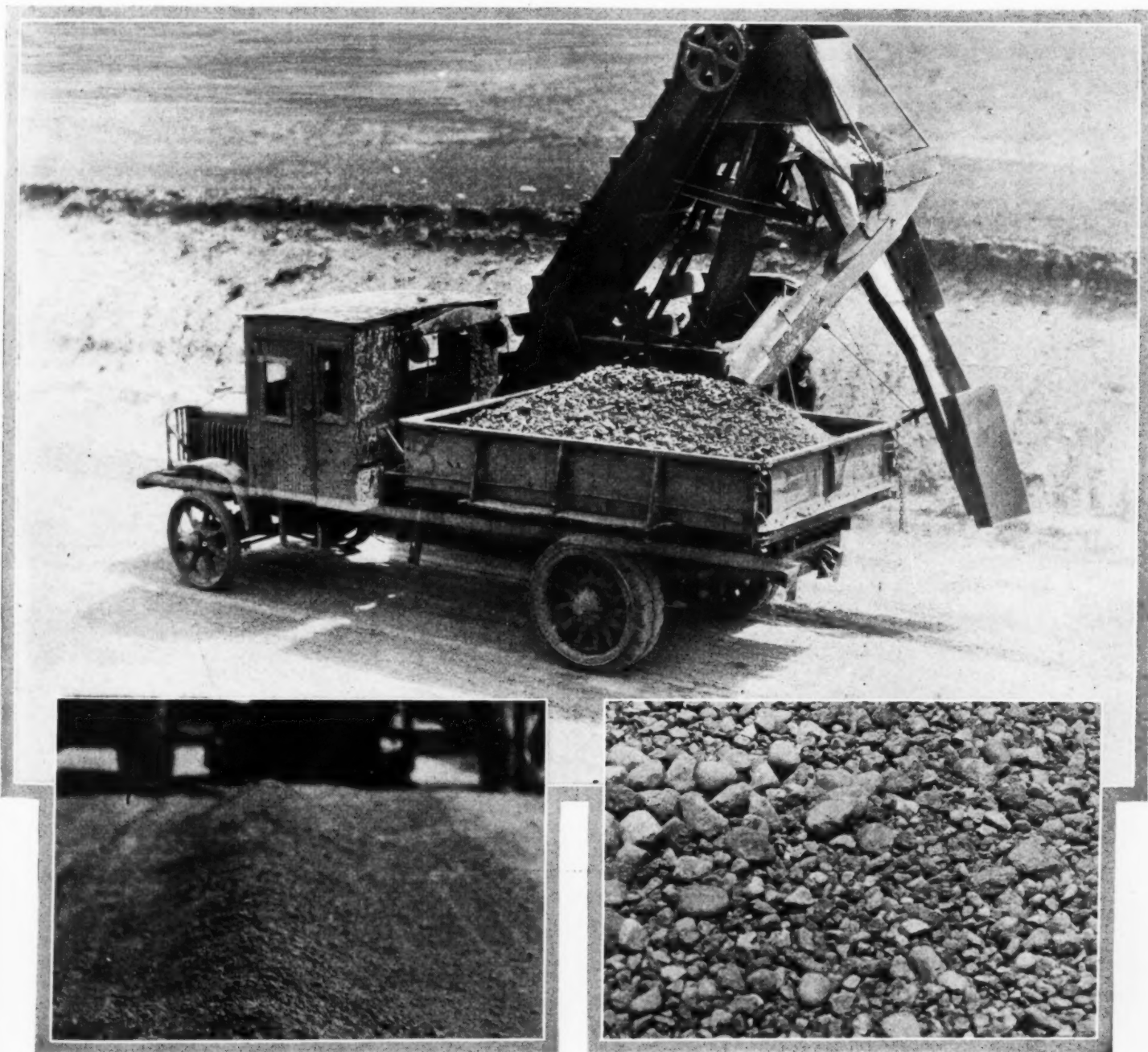
## Loader Replaces Men With Rakes in Highway Maintenance

**W**HEN hand labor is replaced by machinery, a great saving always is effected. In South Dakota the State Highway Department had a practice of scarifying old roads and then employing men to rake all the oversize with garden rakes. Carl Johnson, superintendent of highways of Deuel County, cut costs by putting a Barber-Greene bucket loader in place of the men with the rakes. He first had the roads scarified. Then the oversize was bladed into a windrow, and the Barber-Greene following picked up the piled material and deposited it into trucks.

The smaller stuff, which was of the desired size for use on the road, passed through a screen and fell back on the road. This method of handling road work has proved extremely satisfactory, and some remarkable savings have been made. The machine handled from 75 to 125 yd. of oversize to a mile and did a good clean job.

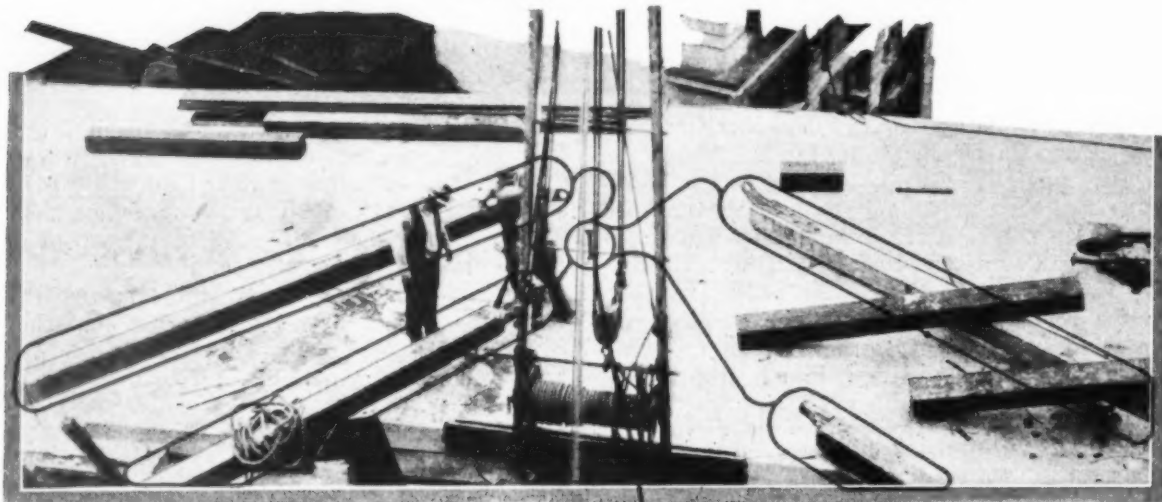
While the machine was in use on the Deuel County roads it averaged about 800 yd. of oversized material in 12 hours of work. Its best day's work was 999.4 yd. in 12 hr., a vast improvement over hand labor.

Barber-Greene loader removing oversize and dumping it into truck. The material is screened and the chute at the right returns the smaller stuff to the road. The small picture at the left shows the windrows which the loader picks up and on the right is shown a closeup of some of the oversize material



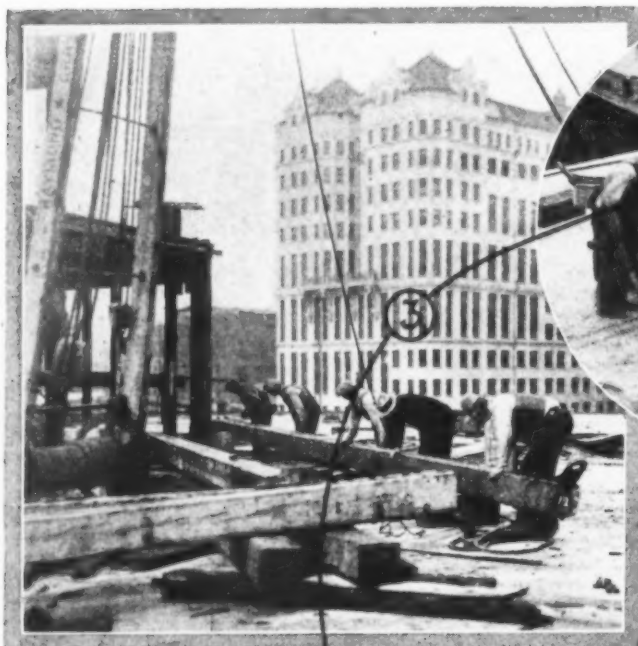
# Step-by-Step Field Methods—

## Follow the Red Line

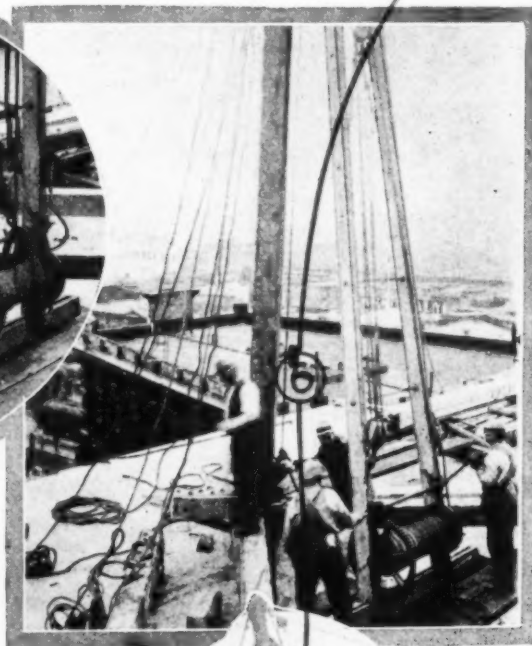
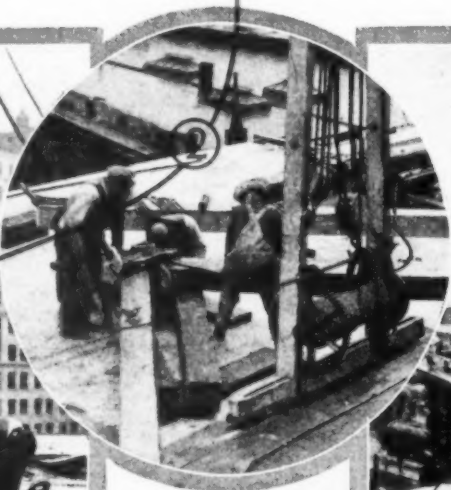


1. The various units of the derrick ready for assembly

2. Bolting the foot casting for the first step



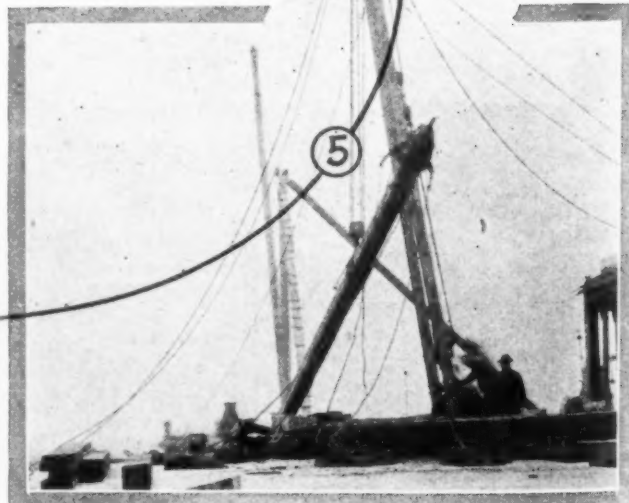
3. The stiff-leg is then rolled into place



6. Stepping the mast

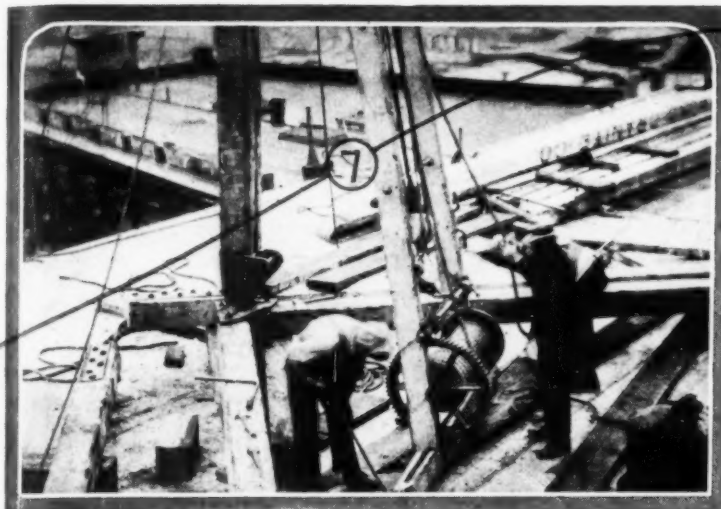


4. The mast guys are tied before it is set up

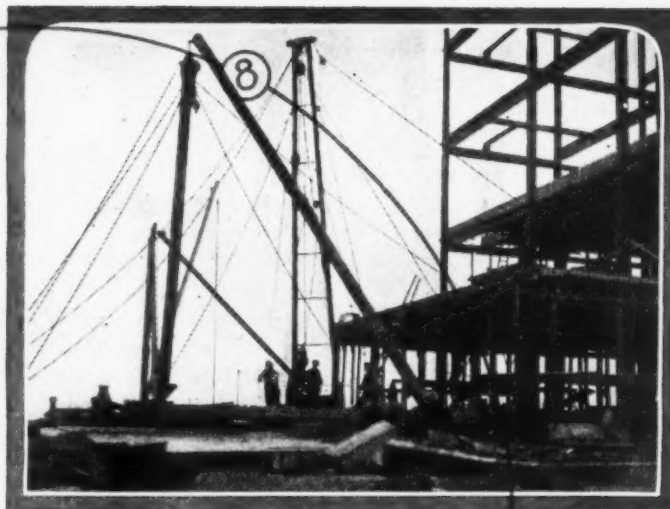


5. A breast or house derrick hoists the heavy mast

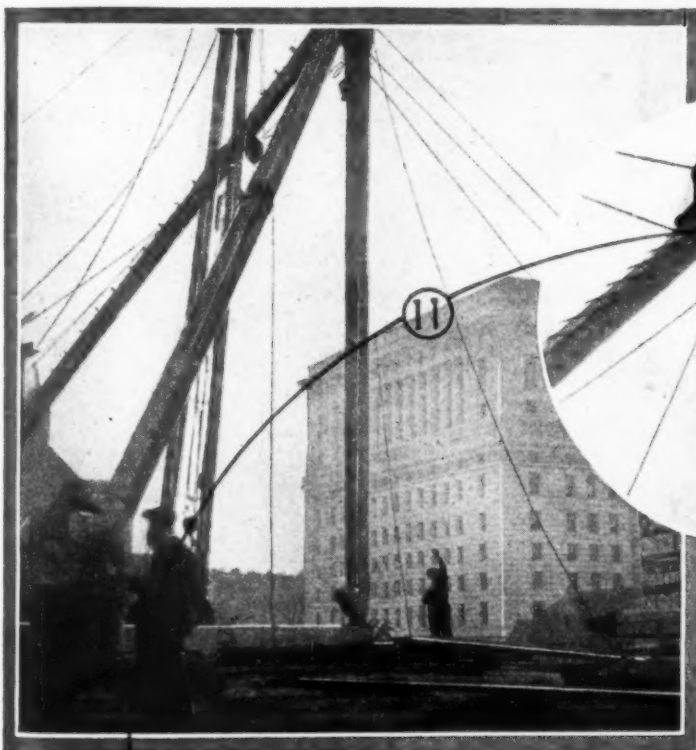
# Setting Up a Stiff-Leg Derrick



7. Moving the breast derrick before placing stiff-legs



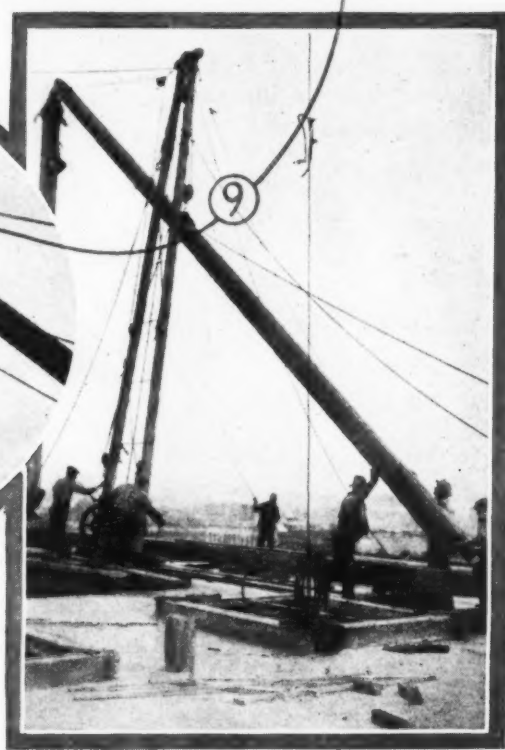
8. Hoisting first stiff-leg into place



11. Care must be taken to see that the mast is plumb



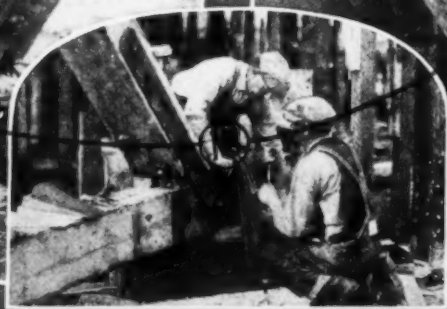
10. Two men climb up and put on the rooster



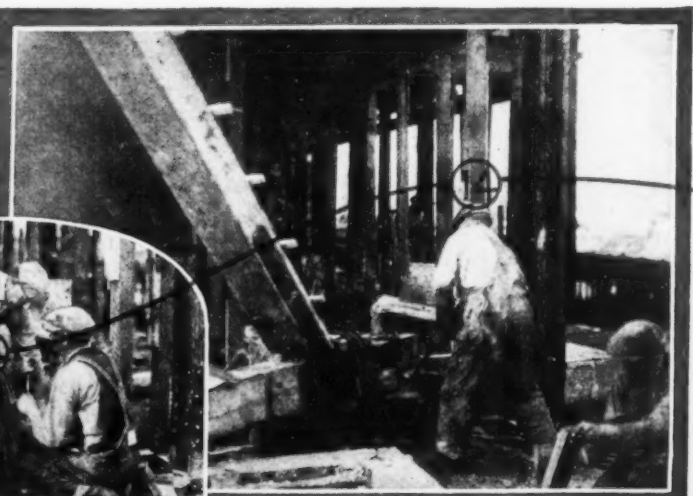
9. The second stiff-leg is then set



12. The sills are tied down with wire rope



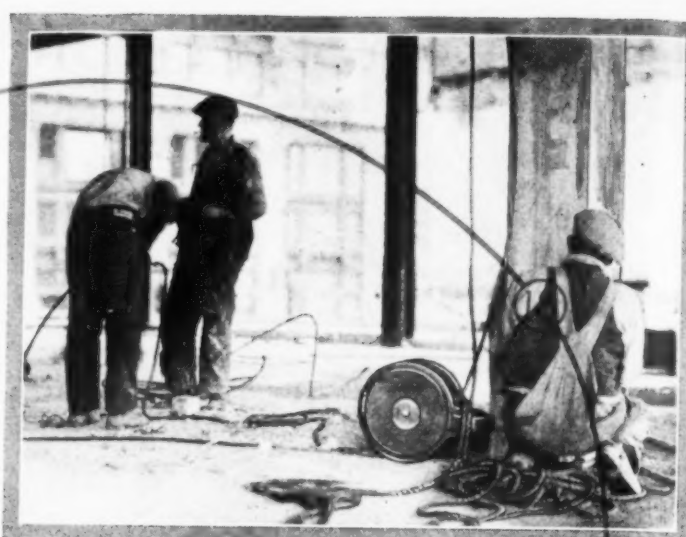
13. The tie cable is clamped



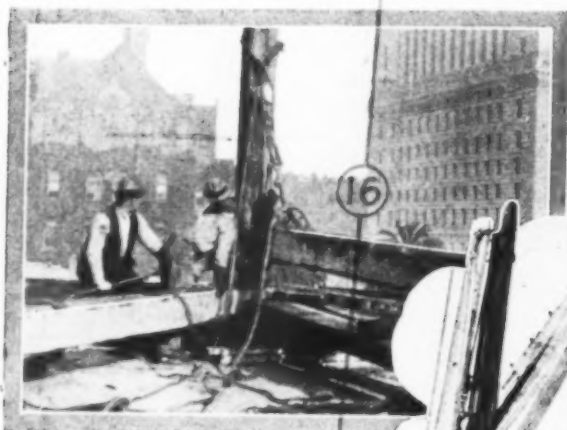
14. It also is wedged



17. Placing the hangers

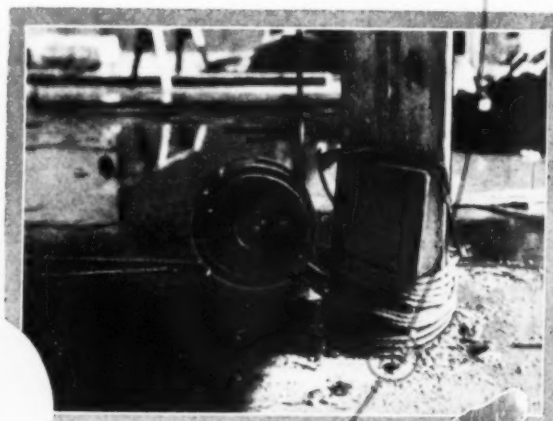


18. Reeving the hoisting falls



16. Stepping swinging boom

## Setting Up a Stiff-Leg Derrick



19. Bottom lead block



15. Cutting a hole  
for the hoist cables

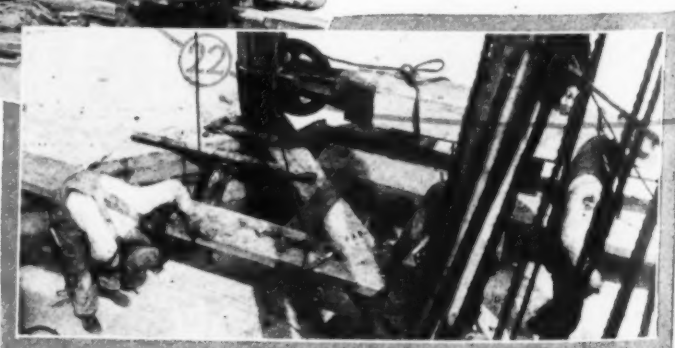


21. Pulling  
through the  
boom lift cable



20. Reeving the boom lift

22. Ready to tie  
boom lift lead

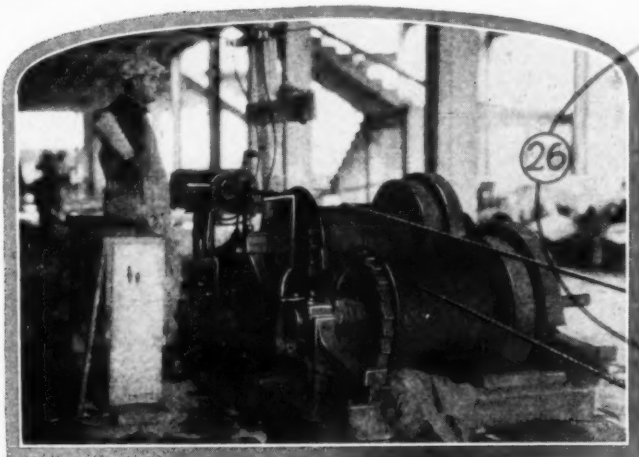




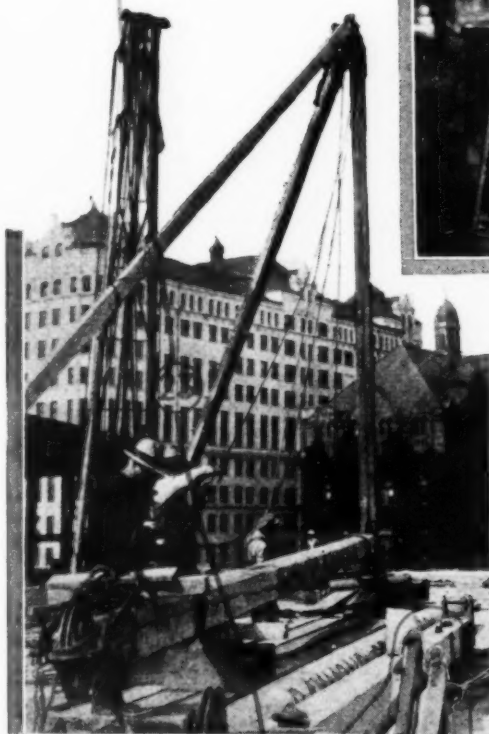
24. The end of the boom lift lead is tied fast



25. The hoisting fall also is tied



26. The hoist is ready for work



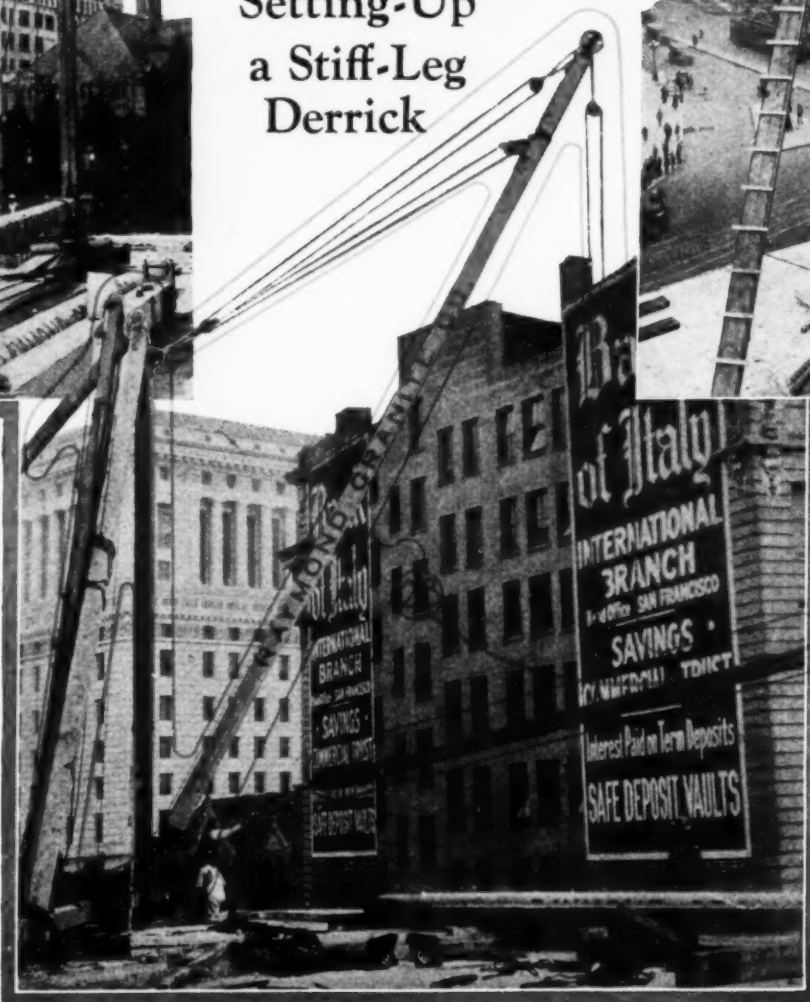
23. Pulling boom lift lead through pulleys

## Setting-Up a Stiff-Leg Derrick



27. Placing the swifter which offsets strain on fall lock

This derrick belongs to the Raymond Granite Co. of San Francisco and was set up on the new City Hall in Los Angeles. W. J. Bisson is the superintendent for the Granite Co., and Ludwig Feyling is the rigger foreman in immediate charge of setting up the derrick



28. The derrick brings up the first load

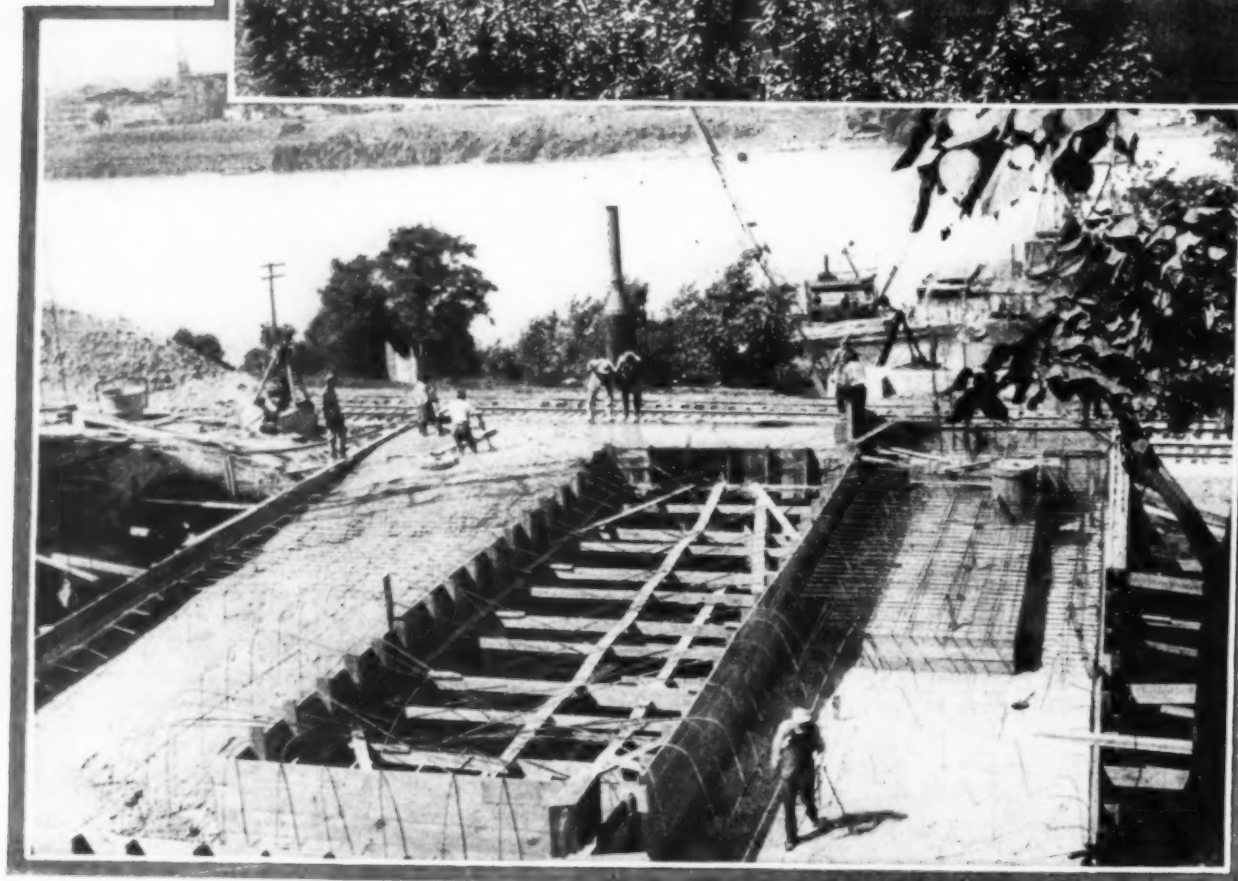
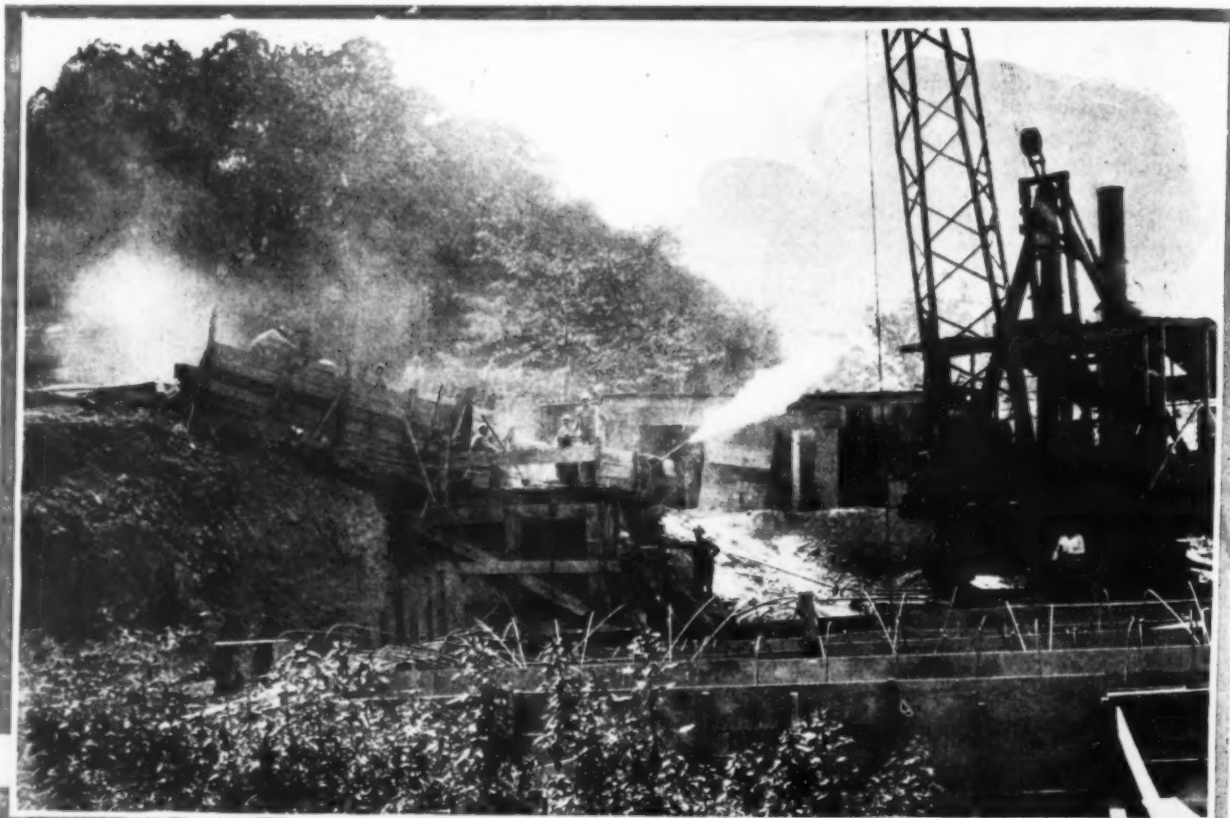
# New Suspension Bridge to

**T**HE Ohio River for years has been one of the most valuable assets of bridge companies operating in the midwestern part of the United States. It forms a long barrier between two great trading areas, and it is constantly being found profitable to add to the number of structures spanning its width. The Fullerton-Portsmouth Bridge Co. is the latest organization to finance an Ohio-Kentucky interstate bridge across this stream. The bridge will be of the

suspension type, with a main span 700 ft. long and end spans of 350 ft. The contract for the entire structure was let to the Dravo Contracting Co. of Pittsburgh.

The steel caissons used in sinking the pier foundations were fabricated at Pittsburgh and then were floated down the river. Instead of putting on the air as soon as the caissons touched bottom, derrick boats with orange-peel buckets were used to do the excavating through the 7-ft. tubes.

Pouring concrete on Kentucky anchorage. Mixer is in center of picture



Looking down on anchorage on Kentucky side. Pocket in center to be filled with sand

# Span the Ohio

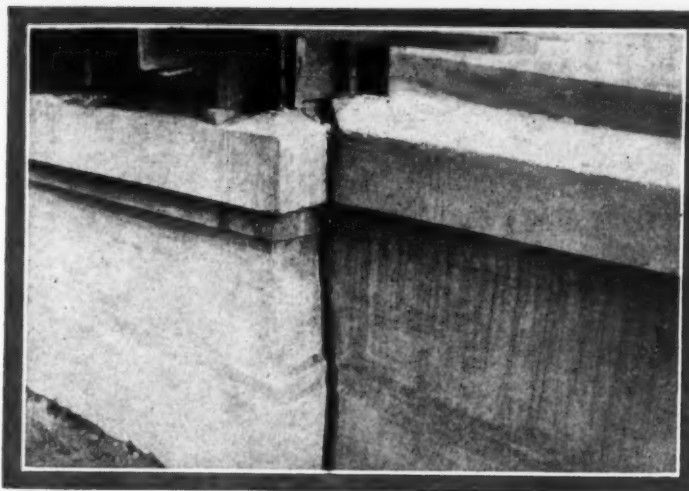
## Caissons Sunk Rapidly by Excavating With Orange Peel Buckets

The caissons were 19 ft. by 60 ft., and with two derrick boats operating, they were sunk through the sand and gravel at the rate of 6 ft. a day. Operating with air, about 30 in. is about the best that could have been done. The air locks were put on when the cutting edge got within 4 or 5 ft. of rock, which is about 30 ft. below the pool. The anchorage on the Kentucky side is built on shale rock.

On the Ohio side soil conditions forced a change in plans for the anchorage foundation. It had originally been intended to place the anchorage on concrete piles. When grade was reached, however, the soil was found to be a soft clay that could not be trusted to keep the piles from bending under the 4,000,000-lb. horizontal pull which the cables would put upon the anchorage. Caissons, therefore, were sunk 25 ft. below the bottom of the anchorage to hard clay.

The accompanying photographs show various details of the construction of the new bridge. The two on the opposite page show work on the Kentucky anchorage.

The large photograph at the bottom of this page shows

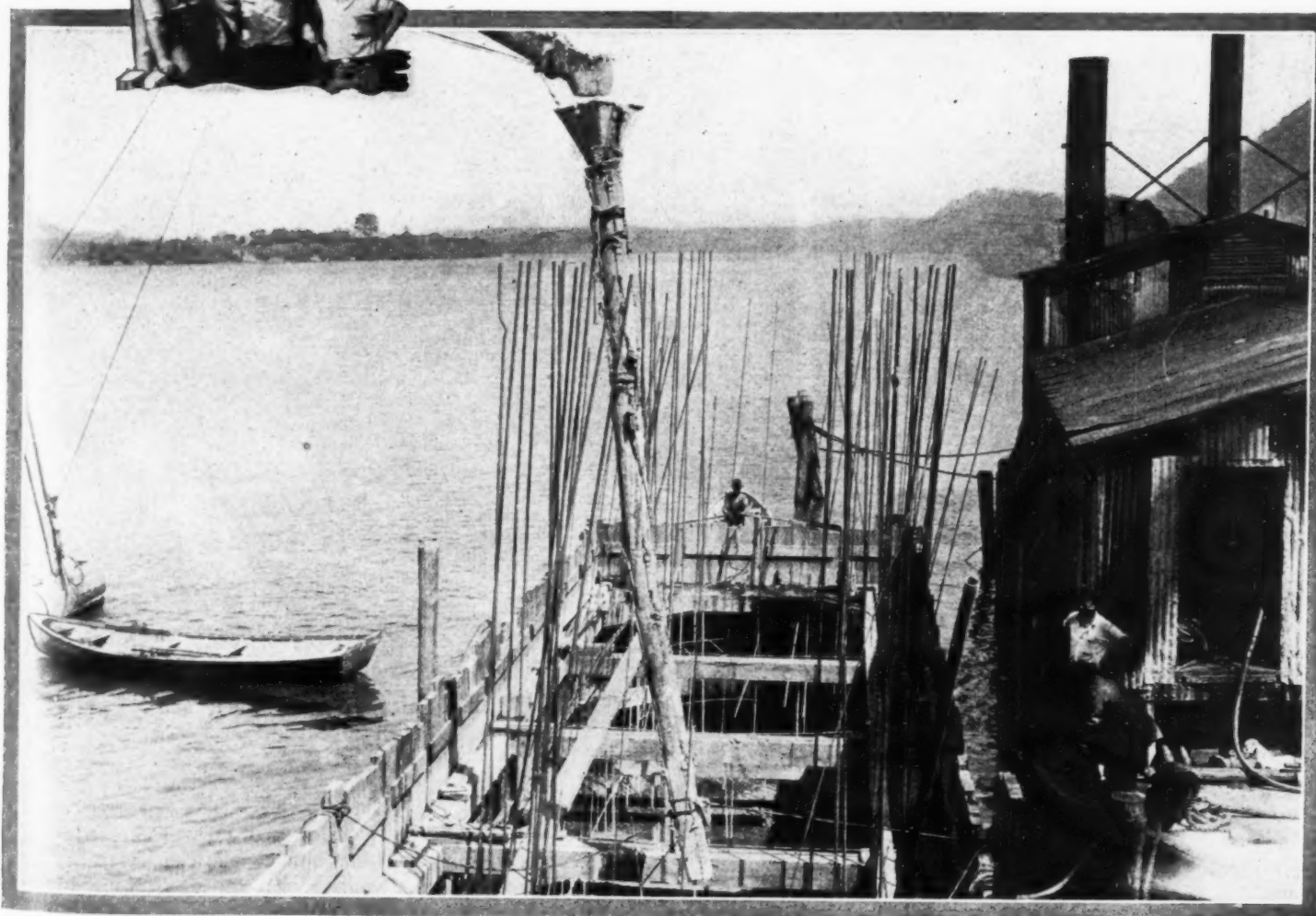


Expansion joint made with clay filler

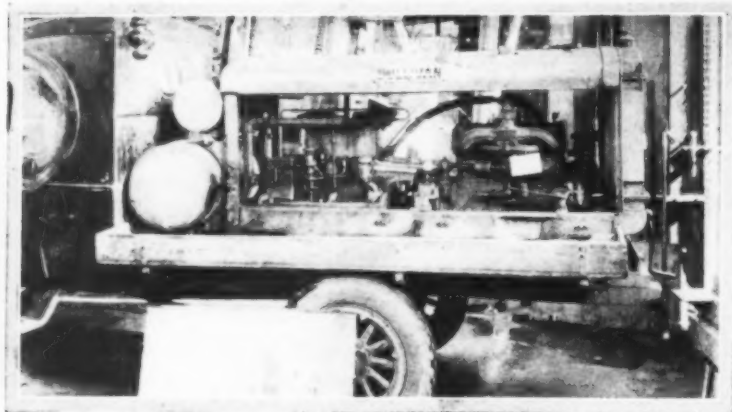
the interior of one of the cofferdams in the stream with the compressor boat at the right. The three men at the top are J. C. Hippert, Superintendent; F. J. Lloyd, Assistant Superintendent, and W. H. Walker, the Dravo company's engineer. The small photograph at the top of this page shows a 2-in. expansion joint in the retaining wall of one of the approaches. Specifications called for an open joint with a bend in it, as shown in the photograph. The wall is about 2 ft. thick. As there was no space for forms between the two sections of the wall, and no filler was to be used in the joint, the problem of how to form it was rather puzzling at first. The difficulty was overcome by using a clay filler and then washing out the clay after the concrete had set.

The new bridge is called the General U. S. Grant, in honor of the famous president who was born near by.

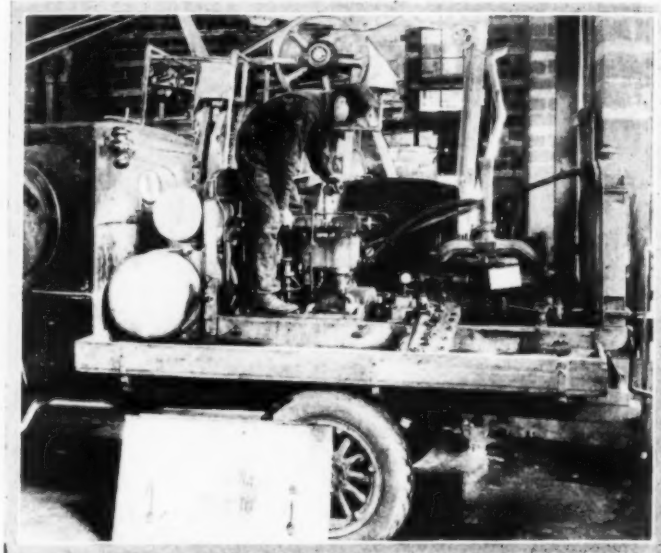
Cofferdam in river  
with compressor boat  
anchored alongside



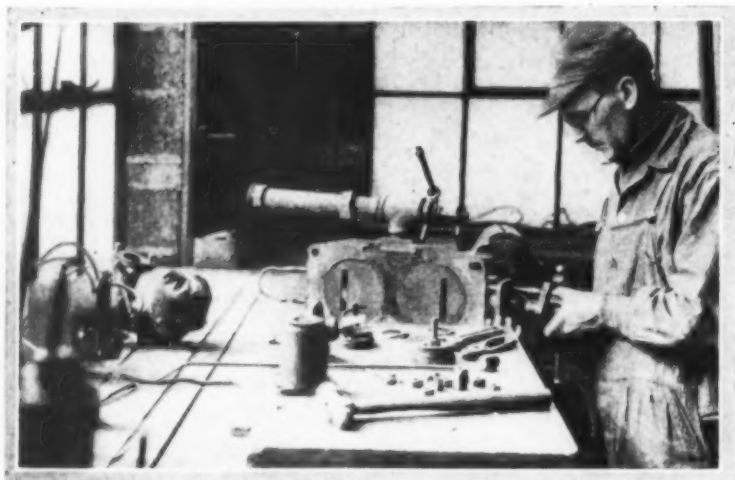
# Step-by-Step Methods—How an Air



**1** FORD-MOUNTED 100-cu.ft. Sullivan air compressor has just arrived at the shops in Milwaukee of the Hunter Machinery Co., equipment distributor. It comes from J. R. Cullinane, contractor, of Madison, Wis., with instructions for general overhauling, cleaning and painting.



**2** EXPERIENCED mechanic removes cylinder head in order to clean carbon and inspect pistons and valves.



**3** PLUNGER and intake valve assemblies next removed from compressor cylinder head. The excess carbon due to leaking valves can be seen on cylinder head.



**5** WITH proper shop equipment valves are ground and reseated.



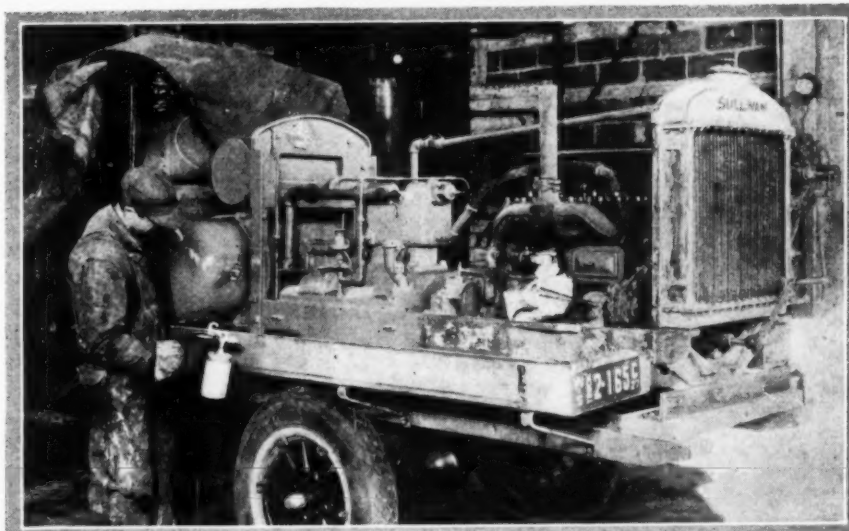
**4** IN THE STOCK room of equipment distributor's shops mechanic secures without delay valve repairs necessary to replace damaged and worn parts.

# Compressor is Reconditioned in an Equipment Distributor's Shops

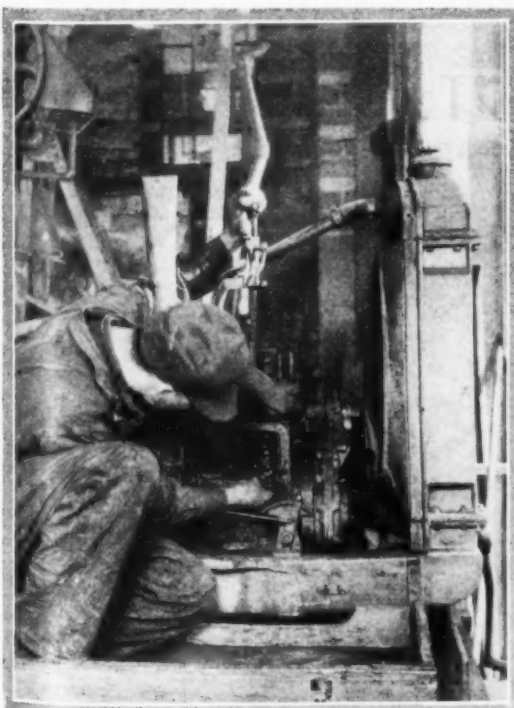


**M**MORTON R. HUNTER, president, Hunter Machinery Co., equipment distributor with offices, warehouses and shops in Milwaukee, Wis., and Grand Rapids, Mich. This organization's business has been built and expanded on the principle that interest in the customer does not cease with the making of a sale. The servicing of a machine, after purchase, is regarded as one of the equipment distributor's important responsibilities.

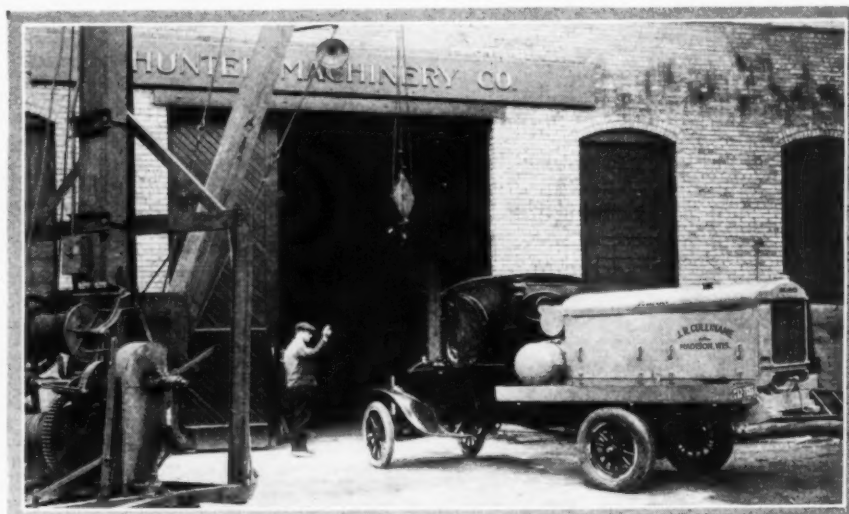
**7** PRELIMINARY to repainting, high pressure steam and chemical gun removes old paint and dirt, facilitates thorough inspection to detect possible defects, and provides practically new surfaces for repainting.



**8** AFTER thoroughly cleaning by steam gun, all surfaces are rapidly painted by a compressed air paint spray, which is found to be very effective for covering irregular surfaces.



**6** VALVES in gas engine are removed and replaced by means of a special valve lifter.



**9** COMPRESSOR, completely reconditioned and ready for the job in the field, is stored in main warehouse until contractor calls for it.

# NEW EQUIPMENT ON THE JOB

## An Air-Driven Hand-Saw

A hand-saw operated by compressed air has been put on the market by the Ingersoll-Rand Co. of New York. This saw can work in a great variety of materials, including wood, soapstone, Bakelite, wallboard, cables and copper. Cross-cut or rip blades for different types of work are available. It is easy to carry around as its weight is light, the 8-in. size weighing only 23 lb. The new saw carefully safeguards against accidents as the design combines the Ingersoll-Rand 3-cylinder type of air motor with the Crowe safety saw guard. This safety guard is a telescopic affair which opens when the saw is applied to the material and



closes automatically and locks in position when the cut is completed. The guard has an adjustable stop so that the saw can be set for the required depth of the cut. The hand-saw is being made in three sizes taking 6-in., 8-in. and 12-in. blades.

## Tractor-Truck Handles Heavy Work

Some exceedingly difficult work which will be described in a later issue of *Construction Methods* is being handled by two Lombard tractor-trucks on a road job near Greenwood Lake, N. Y. These machines consist of a truck body with a crawler attachment instead of rear wheels. This

arrangement gives them great power and they are able to handle a 7-yd. load.

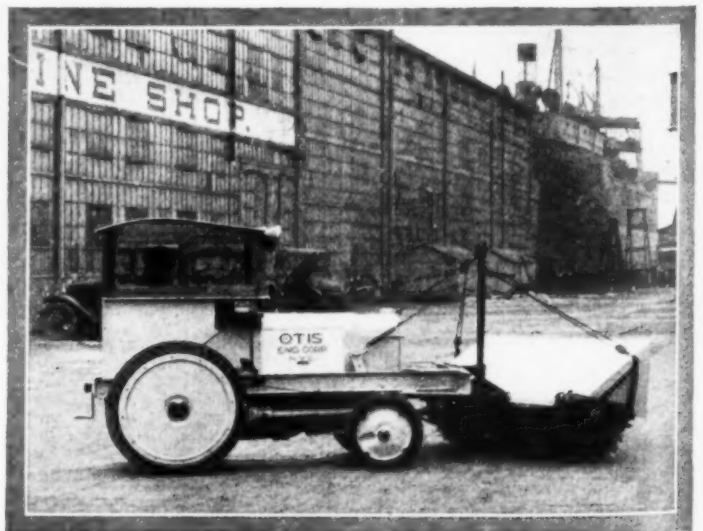
On this job the going is extremely soft in some places and



rough and rocky in others, but the construction of the Lombard machines makes it possible to keep moving under almost impossible conditions.

## A Compact Motor Sweeper

A compact motor sweeper is being sold by the Otis Engine Co. of New York. As may be seen from the photograph, this is a one-man machine of great flexibility and can operate in places where a larger type sweeper would be unable



to reach. It is shown cleaning up a pier, a type of work which requires a great deal of dodging in and out and working in close quarters.

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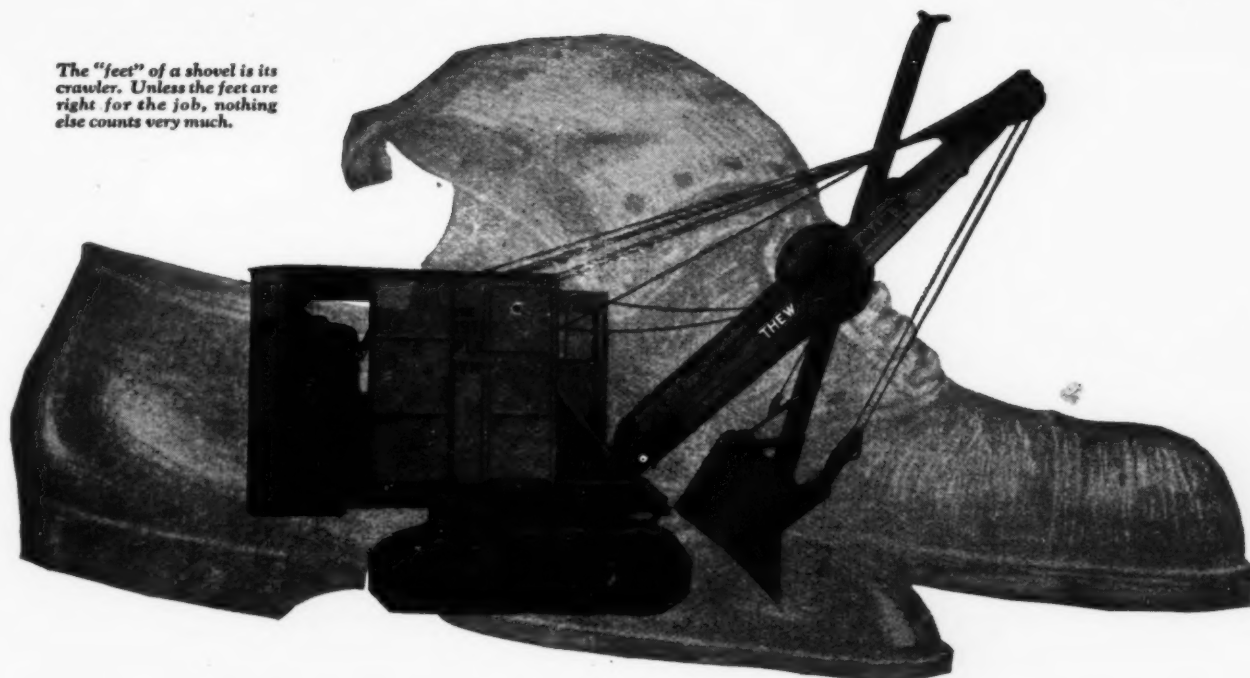
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10DS



The "feet" of a shovel is its crawler. Unless the feet are right for the job, nothing else counts very much.



## A Question of FEET!

**I**SN'T this true?—don't most of the important shutdowns and repairs on the machines you operate arise from troubles connected with the crawler mechanism? If your crawlers would stay steadily on the job, wouldn't you have a decidedly bigger profit to pocket at the end of every year?

That's exactly why we decided to cut away from all previous crawler practice and design for you, in the Thew Center Drive, a crawler mechanism with "time out" left out, a crawler which would stay steadily on the job with shutdowns and repairs held to a minimum.

*And we did it!*

Ernst & Ernst, certified public accountants, have collected actual center drive performance figures. The average yearly repair cost is less than \$28. There's the whole story in a nutshell. But let us send you the complete details in Catalog 75—yours on request.

THE THEW SHOVEL COMPANY, Lorain, Ohio

Gasoline, Steam and Electric  
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Gasoline  
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**LORAIN 75**

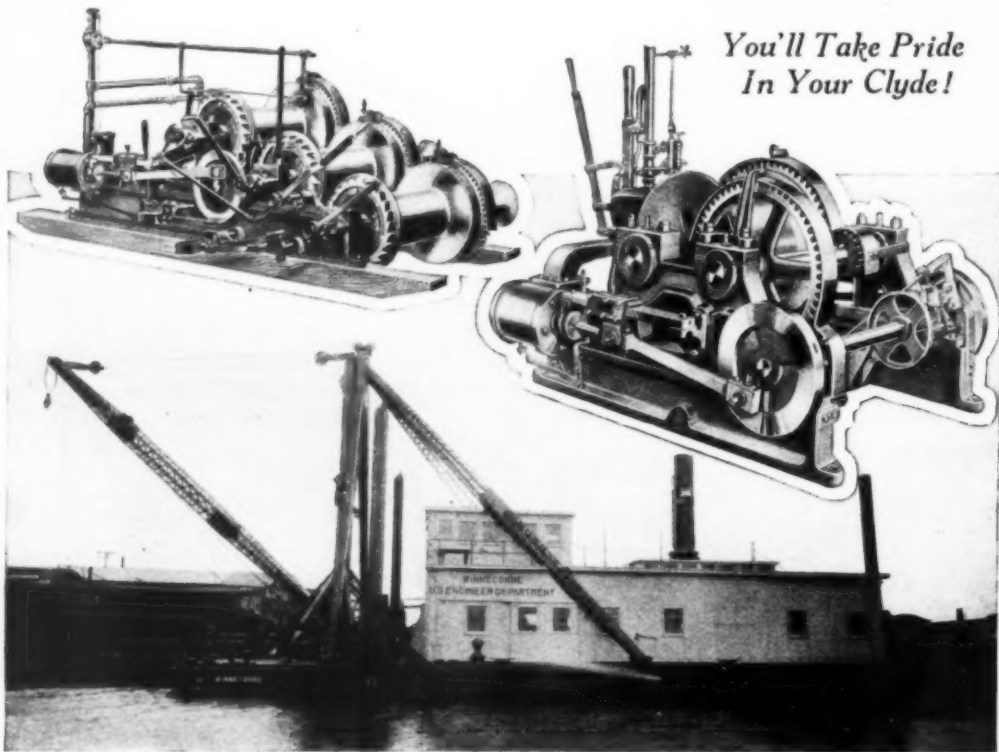
Shovels  
Cranes  
and  
Draglines



# HOISTS CLYDE DERRICKS

Photograph shows Barge Winneconne operated by the U. S. Engineer office at Milwaukee which is used for harbor dredging. It was built by the Leathem D. Smith Dock Co., Sturgeon Bay, Wis., with all hoisting machinery supplied by Clyde.

The equipment consists of a three-drum hoist which handles the Clyde 15-ton clam shell derrick, a swinging engine handling the derrick boom and three special spud hoists for handling two spuds in front and one in the rear. Information about this type of equipment supplied on request.



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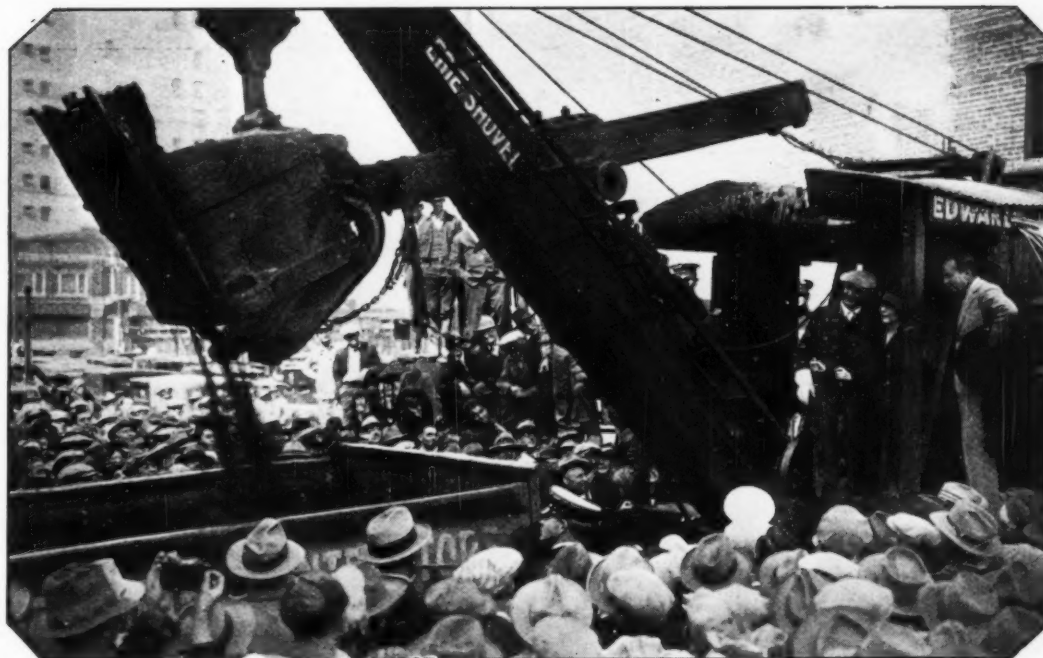
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"Our Mary" operating one of 10 ERIE Shovels owned by Edwards Bros., Los Angeles, Calif.—breaking ground for new United Artists Corporation Theatre. (International News Reel Photo.)



"Our two ERIE Shovels are working on a 4-mile Connecticut State road job, with considerable rock excavation.

"Last year we used four ERIES and three other makes of shovels, and prefer the ERIE for consistent work and reasonable upkeep. The ERIE is the most dependable piece of equipment we have."—*Callan Construction Co., Bristol, R. I.*

"We think the world of our Gas+Air ERIE. In the first six months we had it, we took in a big part of its cost in rentals. The Gas+Air ERIE has all kinds of power, is fast, handles like a steam machine, and is very economical to operate."—*R. J. Kappahn, R. J. Kappahn Contracting Co., Duluth, Minn.*



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Mary and Doug and the ERIE all started their careers at about the same time, and have stayed solidly at the top of the heap because of *real merit*.

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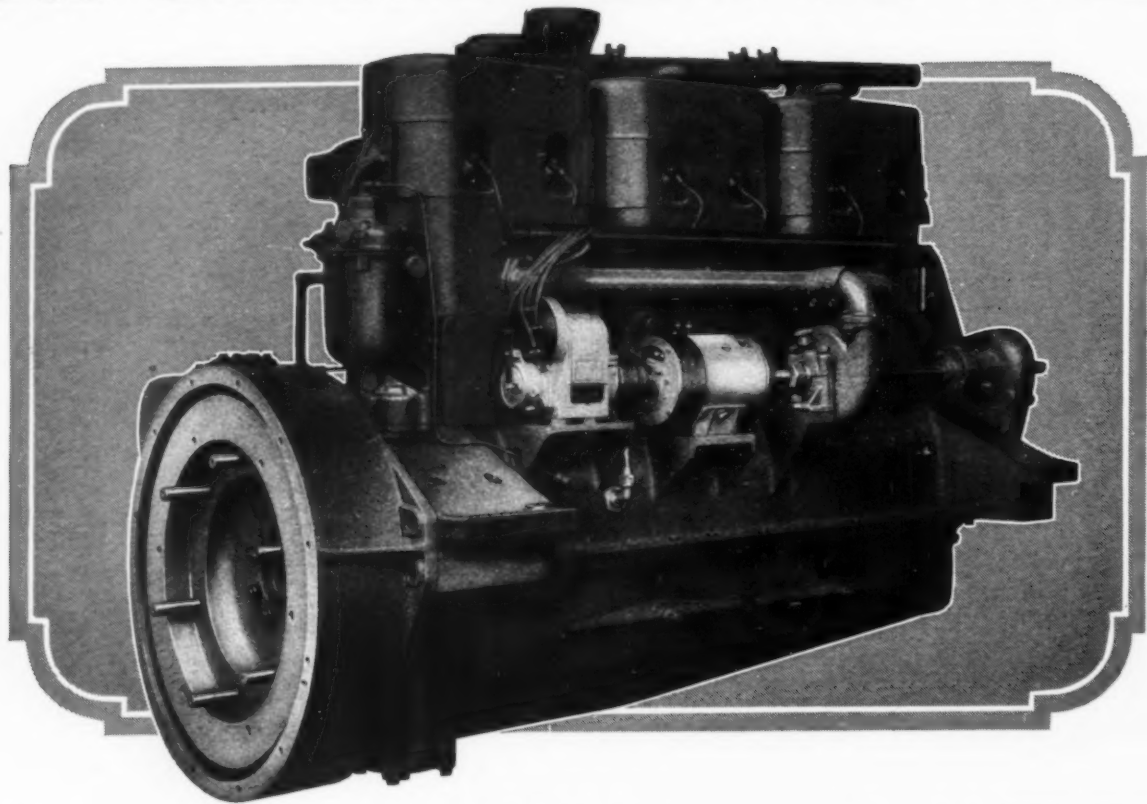
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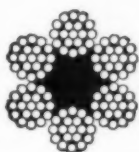
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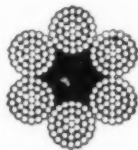


Safe  
Durable

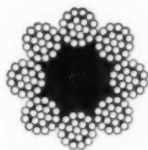
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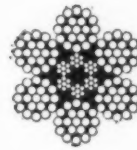
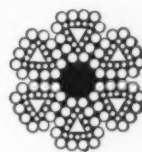
The wire rope that operates the dipper of a shovel does not work under the same conditions as one used to operate a clam-shell bucket, consequently if best results are to be had a rope must be suited for the work it is to do.



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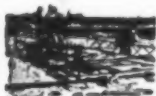
Road Forms



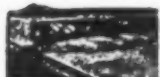
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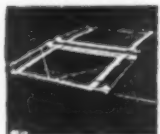
Sidewalk Forms



Joint Machines



Finishing Machines



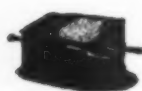
Traveling Bridges



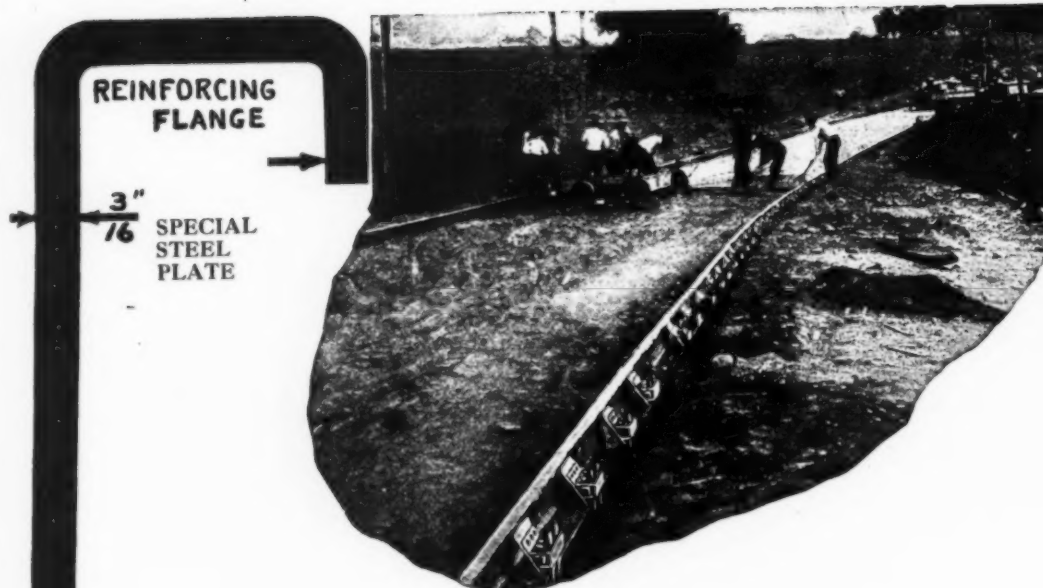
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## What Are the Essentials For Road Form Strength

And strength must come first in the selection of any road form—strength of rail—strength of joint—strength of staking system.

The HELTZEL Steel rail is 20% stronger than any other road rail because it is the only one with the two reinforcing flanges. Also nothing is bolted, or riveted to the road rail, hence there are no bolt or rivet holes to weaken its construction.

The HELTZEL joint support is stronger throughout with rivets four times as strong as those used by others.

The HELTZEL rail joint is more rigid because the head of the sup-

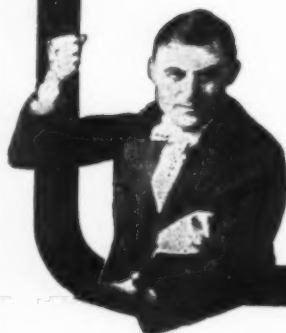


*The HELTZEL Road Form Catalogue proves HELTZEL superiority point by point. A copy will be sent you upon request without cost or obligation.*

port fits snugly under the tread of the rail and the bottom of the joint wedges tightly against the bottom reinforcing flanges. There can be absolutely no deflection.

The HELTZEL staking system has no equal from the standpoint of strength or utility. HELTZEL angle stakes are made of a special steel and can be driven through  $\frac{1}{4}$ " boiler plate. They have greater holding power than other stakes and are more firmly anchored to the road form.

When strength is the determining factor, and it always should be, HELTZEL forms are selected.



*The bottom reinforcing flange adds 20% to the strength of the HELTZEL Road Rail*



REINFORCING FLANGE

THE HELTZEL STEEL FORM & IRON CO. - - WARREN, OHIO

# HELTZEL



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Here is a new Jaeger—an All-Steel Mixer in a size that meets present day specifications better than old 7S type—holds anything in sack mix you want to put into it or two bags 1-2-4 or 1-2-5.

It's Faster—no mixer can equal it for yards or batches per day, loads fast on account of large drum openings and patented "Skip Shaker" that stops man pounding on skips to unload—8 to 11 seconds discharge.

It's 50% stronger—yet ½ ton lighter and it is more easily handled or moved than ordinary 7S Mixers, as it is short coupled (direct drive—no countershaft) and roller bearing wheels, in fact it's 100% roller bearing throughout, as well as Alemited.

Jaeger Accurate Measure Water Tank meets with approval of engineers everywhere.

**ALL SIZES AND MODELS FROM 3½ UP TO 28 CU. FT. MIXED CAPACITIES.**

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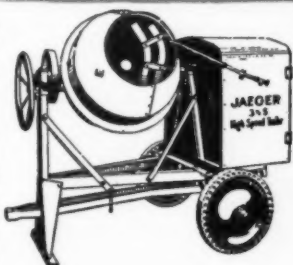
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# "Every three hundred square feet of roadway are protected on all sides by expansion joint"

"WHEN we changed from brick to concrete streets, about a year ago," said Herman L. Arbenz, City Engineer at Wheeling, W. Va., "we were careful to provide for the expansion and contraction due to local extremes in temperature. As a rule we always use both transverse and longitudinal joints."

"Take, for example, a street thirty feet wide: First there are the joints cut straight across, about every thirty feet. Then a joint on each side, at the curb. And finally, parallel to the lines of traffic, two longitudinal joints, ten feet apart and each ten feet from the joint at the nearest curb. In that way we divide the road into separate blocks of concrete, ten feet wide by thirty feet long—three hundred square feet—protected with expansion joint on all sides."

*In view of the excellent condition of the concrete streets built under Mr. Arbenz' direction in Wheeling, it is interesting to note that Carey Elastite Expansion Joint was used extensively in every case. Mr. Arbenz is only one of the leading engineers throughout the country who are constantly advocating its use in concrete construction work. Our free 72-page manual will tell you all about Carey Elastite Expansion Joint. Write today for this interesting material.*



Herman L. Arbenz, City Engineer of Wheeling, W. Va. Mr. Arbenz is thoroughly versed in every phase of concrete construction work and is responsible for Wheeling's splendid, modern streets.



THE PHILIP CAREY COMPANY  
Lockland, Cincinnati, Ohio

*Note the excellent condition of the concrete in this modern Wheeling street, also the free use of expansion joints—transversely at 30-foot intervals, longitudinally at 10-foot intervals and at both curbs.*

**Carey Elastite**  
EXPANSION JOINT

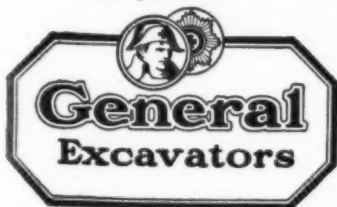
Times have changed—before the advent of The Perfected Utility the average Contractor had to be satisfied with such so-called half-yard machines then available—mostly “make-shifts” or poor “compromises.” But now—

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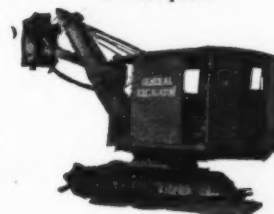


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On Request*



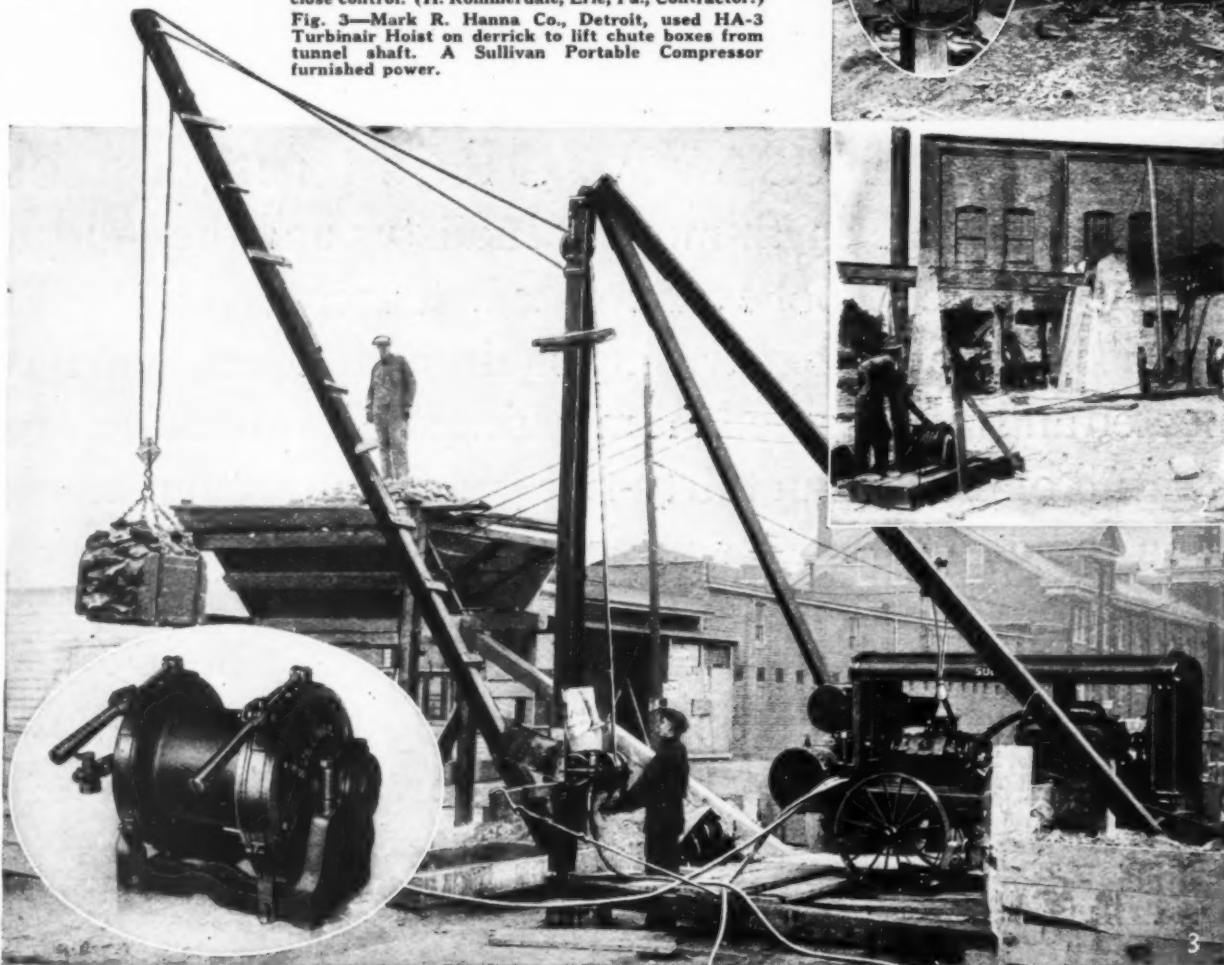
# Handy Hoisting and Hauling for the Contractor and Builder

For the Contractor and Builder, one of the handiest tools on any job is a Sullivan Portable Hoist. The pictures show several ways of setting up for construction or building work. Car pulling and drag line scraper jobs are handled effectively, too.

Sullivan Hoists are equipped with "Turbinair," steam or electric motors. They lift 2000 lbs. on single line at 110 ft. per minute, or will pull a 50-ton car on level track. Air hoist weighs 345 lbs., electric, 480 lbs. Drum holds 350 ft. of  $\frac{3}{8}$ -in. wire rope. An over-size drum handles 1500 ft. of cable. Two-drum types also available.

Ask for the pictorial booklet "Handy Hoisting and Hauling."

Fig. 1—Electric Hoist handles 1500 lb. loads on building material elevator, Colgate University, Hamilton, N. Y. (Zingerline Bros., Contractors).  
Fig. 2—Lifting and Placing 1500 lb. steel I-beams for a trestle, Jarecki Mfg. Co., Erie, Pa., featuring close control. (H. Rommerdale, Erie, Pa., Contractor.)  
Fig. 3—Mark R. Hanna Co., Detroit, used HA-3 Turbinair Hoist on derrick to lift chute boxes from tunnel shaft. A Sullivan Portable Compressor furnished power.



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# In the Spotlight, Again!



It fits on  
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*Run from job to  
job on 8 Rubber  
Tired Wheels  
16 M.P.H.*



In 5 minutes you can change from truck to crawler

*5 Mins. Later  
go in on the job  
on a Crawler  
6 to 8 M.P.H.*

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### THE **UNIVERSAL CRANE MOTOR TRUCK CRAWLER**

(Christie Patented)

A new, revolutionizing, thoroughly tested attachment for truck crane mountings, used exclusively on Universal Cranes, affording greater application, traveling ability and increased capacities with greater stability.

Bulletin 44-A gives further facts—Write for it.

**THE UNIVERSAL CRANE CO.**  
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Exclusive users of this device for crane mountings.



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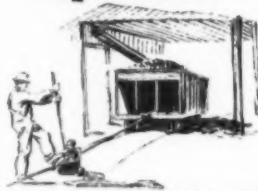
Send the coupon below for more information about this little device. Handy-Andy is the Pulling Jack of all trades. Contractors, street repair departments, water departments, mines, oil producers, refiners, gas companies, light and power companies, drainage boards, factories, dredging companies, road builders—all find him a time and labor saver on scores of jobs.

**10 to 40 tons  
line pull**

Handy-Andy is portable, compact and light. Works on a ratchet principle like a lifting jack. One man with Handy-

Andy Jack replaces gangs of men on many jobs and saves tying up big, expensive equipment. Simple to operate, little to get out of order. Pays for itself in a very short time.

## Spot Cars



ONE man with Handy-Andy spots cars faster than several men with bars. Moves transfer cars, coal cars, gondola cars, and freight cars.

Besides the uses illustrated here Handy-Andy is used also for binding pile clusters, installing culverts, demolition and wrecking, moving houses and tanks, sinking and pulling well casing, pulling bridge floors, setting big valves and meters, pulling old piling, loading and unloading heavy machinery, dock and bridge construction, etc.

## Pull Trees and Small Stumps

Parks development contractors, road builders—all find Handy-Andy a money saver on this kind of work.



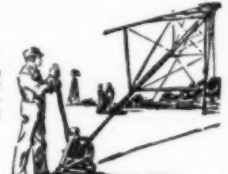
## Pull Sheet Piling

After the crane has gone use Handy-Andy to yank out the sheet piling. Pulls all kinds of piling.



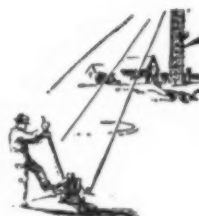
## Hoist Heavy Towers

Handy-Andy enables the operator to hoist heavy towers with perfect control over them at all times.



## Move Heavy Machinery

Factories, contractors and riggers find Handy-Andy an invaluable piece of equipment for this work because of its tremendous capacity.



## Tighten Guy Lines Easily

This powerful little tool insures rigidly tight guy lines and cables on aerial tramways with a few ratchet movements of the handle.



## String Transmission Wires

An invaluable tool for tightening all kinds of lines on line construction and in overhead departments.

## Yank Out Stalled Trucks

Every operator of motor fleets needs a Handy-Andy on his emergency car.



## Pulling Pipe and Closing-up Pipe Sections

Handy-Andy is just the tool for pulling used pipe and closing up aqueduct and heavy pipe sections.

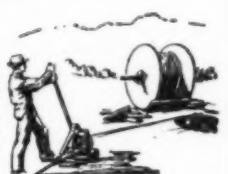


## Pull Heavy Forms Quickly

Handy-Andy is a convenient, powerful, compact tool for form removal on all classes of work in crowded quarters.

## For Conduit Work

Because of its compact size and shape Handy-Andy can be used in inaccessible places. The tool for pulling out and replacing grounded cable.



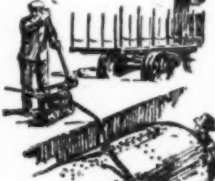
## Move and Set Boilers

The automatic reverse on Handy-Andy makes it possible to have absolute control of heavy equipment when lowering.



## Move Barges Easily

No need to tie up other expensive equipment moving heavy barges into slips or to unloading shovels.



Manufactured by

**JOHN WALDRON CORPORATION**

New Brunswick, N. J.

(Est. 1827)

Reg. U. S. Patent Office

# HANDY-ANDY

## Junior PULLING Jack

John Waldron Corporation, New Brunswick, N. J.

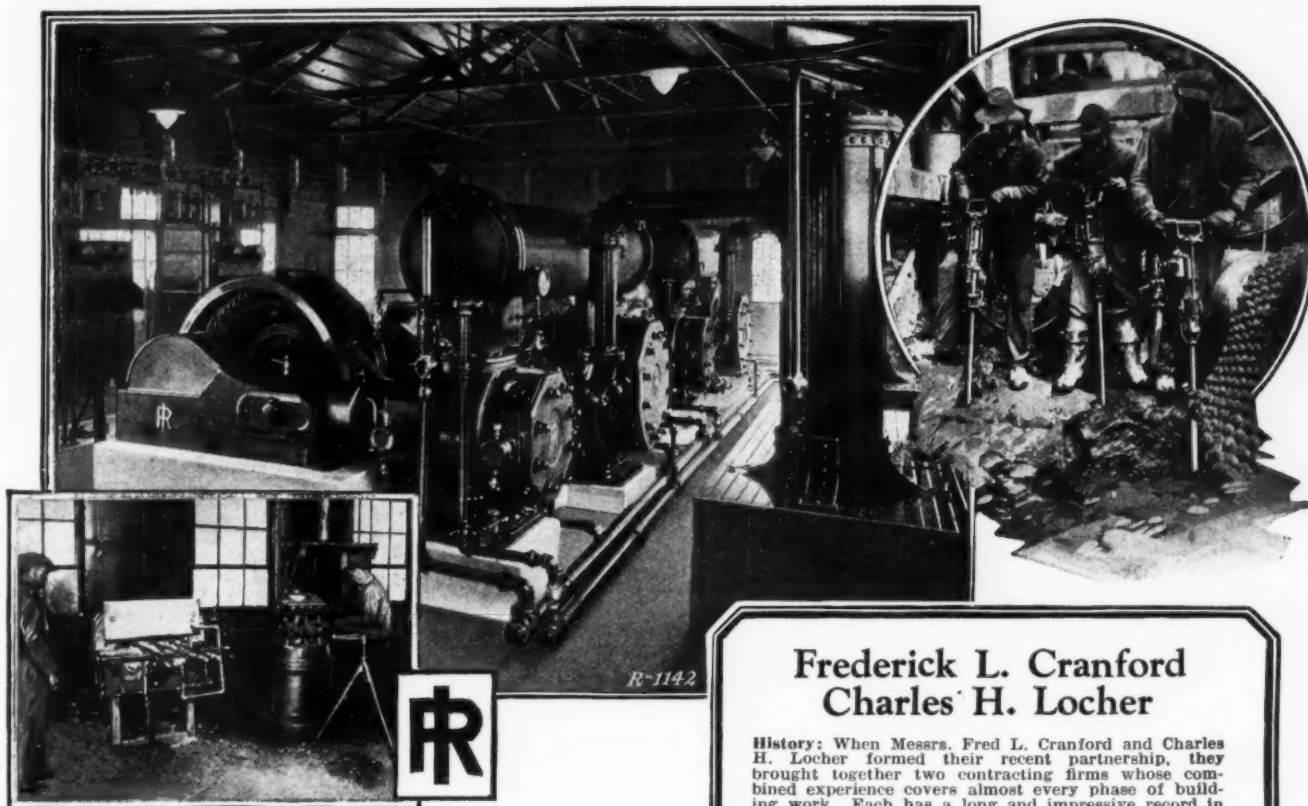
Please send me prices of Handy-Andy Pulling Jack and bulletin showing rigging.

I am interested in using it for.....

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Firm .....

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Ingersoll-Rand equipment is used by the Cranford-Locher organization on its two subway contracts. Above (left to right), I-R blacksmith equipment, PRE Compressors, and "Jackhammer" Drills.

## How New York City Is Building 10 Miles of New Subway

At Columbus Circle, already known as the world's busiest traffic center, there will soon be additional arteries of transportation—but underground.

A portion of the new West Side Subway, New York's latest answer to the transit problem, will be built directly under Columbus Circle; thence down 8th Ave. for several miles. This undertaking, though a labor of years, is well worth while, for countless thousands will thus be able to ride with even greater speed and security than those who travel above.

A complete installation of Ingersoll-Rand equipment, including air compressors, drill steel sharpeners, oil forges, grinders, concrete breakers, and "Jackhammer" Drills, are helping the Cranford-Locher Co. push forward at a speed which is quite in keeping with the importance of their task. Hundreds of these powerful tools—enough for the largest mining camp—are proving in daily service that the proper drilling equipment will lower costs and speed up the work to a truly remarkable extent.

### Frederick L. Cranford Charles H. Locher

**History:** When Messrs. Fred L. Cranford and Charles H. Locher formed their recent partnership, they brought together two contracting firms whose combined experience covers almost every phase of building work. Each has a long and impressive record in the engineering contracting field.

Mr. Cranford is especially well known for his subway work about New York, having completed no less than seven sections of the metropolitan subway system. During the war he was engaged by the Government to take executive charge of its nitrate plant construction, and in this capacity he added to his already long list of successes. That contractors throughout the country appreciated Mr. Cranford's standing was shown in 1924, when they elected him President of the Associated General Contractors of America.

Mr. Charles Locher, also an engineer and contractor of unquestioned ability, has been a leader in building and construction work for 39 years. Much of his success has been founded on railroad work, although he has by no means limited his activities to any one line of endeavor. From 1887 to 1900, Mr. Locher and his associates completed numerous big projects for the Norfolk & Western, C. & O., and Western Maryland Railroads. In later years he had under his supervision the construction of the Wachusett Dam, Boston, Mass.; 20 miles of the famous Barge Canal, upper New York State; 4½ miles of high-pressure water tunnel, New York City, and the entire flood control work in the Miami River Valley, following the Dayton, Ohio, flood.

On bids aggregating \$13,555,871, the Cranford-Locher organization was awarded Sections 4 and 6, Route 102, of New York's new subway system. Work on these two sections has been in progress for about one year.

**Personnel:** Fred L. Cranford, President; Charles H. Locher, Vice-President; Fred Ward, Treasurer; C. N. Backus, Assistant Treasurer; J. C. Meem, Chief Engineer; Howard Robinson and H. A. Hansen, Supts.

(This is one of a series on the New York subway contractors.)

Ask for complete information on the Ingersoll-Rand Air Compressors and Rock Drills used by the subway contractors. Complete descriptive bulletins will be sent on request.

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38-RDM

# Ingersoll-Rand

# STEEL FORMS

## "CHEAPER THAN WOOD at its Lowest Cost"

This has been the experience of G. A. Love Sons, San Francisco, Calif.—who have used the same set of Blaw-Knox Steel Forms for *nine years* on concrete curb and combined curb and gutter work.

Remarkable but true—that there can be such economy in the use of Steel Forms, even in the heart of the lumber industry where material is cheap.

G. A. Love Sons say—

This port is quite an active lumber market, and our lumber cost is as low or perhaps lower than in many sections of the country. In spite of this there is an economy of cost per foot of curb with the use of Blaw-Knox Steel Forms and we will be glad to go into details with anyone referred to us.

Yours very truly,

G. A. LOVE SONS.

*J. C. Hawn*

This experience is on a par with that of thousands of other contractors who are using Blaw-Knox Steel Forms for curb, curb and gutter and sidewalk construction.

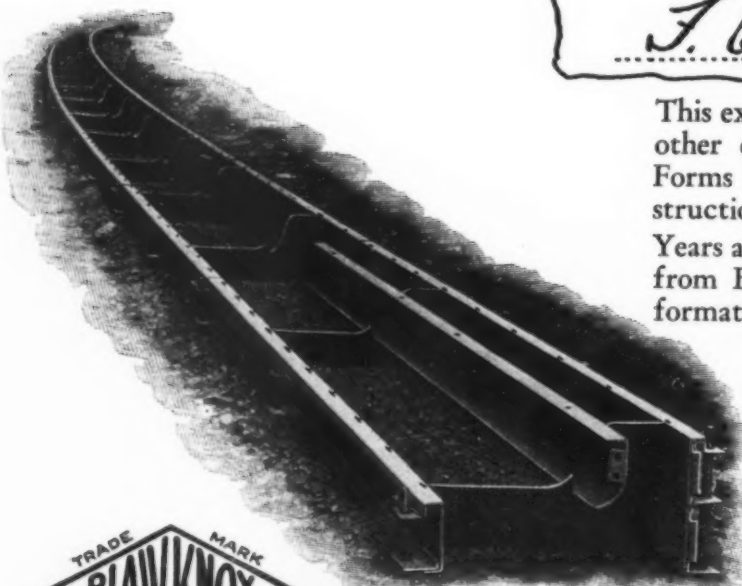
Years and years of economical service can be expected from Blaw-Knox Steel Forms. Ask for further information and prices.

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# BLAW-KNOX



# Blaw-Knox *Junior* INUNDATOR

*for Mechanical Control of Water-Cement Ratio  
and the Production of Constant Concrete*

Every engineer and contractor knows what INUNDATION has done for concrete. Experience on the most important concrete jobs during 1925 and 1926 has proven that the water-sand-cement ratio, mechanically controlled, enables strength concrete to be made mechanically and cheaply.

Inundation is now within reach of any contractor, on any job—regardless of present equipment which can be used without change.

The Blaw-Knox *Junior* Inundator can be had at a price which is only incidental to the job.

Instead of a wheelbarrow for sand use the *Junior* Inundator—it automatically compensates for moisture in the sand, and also its bulking.

Don't waste cement. The *Junior* Inundator eliminates all guesswork and prevents delays on the job. *Don't delay*—send today for further information.

## BLAW-KNOX



RI 128

CONSTRUCTION METHODS—May, 1927

### BLAW-KNOX CO.

686 Farmers Bank Bldg., Pittsburgh, Pa.

Please send additional information about the Blaw-Knox *Junior* Inundator.

Firm Name \_\_\_\_\_

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City \_\_\_\_\_ State \_\_\_\_\_

My job will run about \_\_\_\_\_ cu. yds. of concrete

# For BIG PRODUCTION at STEADY RATE and with LOW LABOR COST

A MORRIS Sand Pump, operated by electric motor or steam, gasoline or Diesel engine, offers the best economy in handling large quantities of material, either for producing sand and gravel, for making excavations or for filling in land reclamation.

Provided only that plenty of water is available as a conveying medium, this method offers big steady dependable capacity, and delivery is practical through lines even several thousand feet long. Semi-solid material that would not enter the suction readily can be made to do so by employing a water jet or mechanically-driven cutter at the inlet to disintegrate the heavier masses.

The Morris line also includes a wide variety of desirable centrifugal pumps and complete portable or stationary outfits for water supply and unwatering in construction work. Many of the popular sizes in stock for immediate shipment.

*If you want suggestions, cost and performance data from our Engineers, give us details when writing for the bulletin.*

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Sales Representatives:—Buffalo, St. Paul; Denver, Salt Lake City; Portland, Ore.; Los Angeles; New Orleans.

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SAND AND DREDGING PUMPS  
HYDRAULIC DREDGE MACHINERY

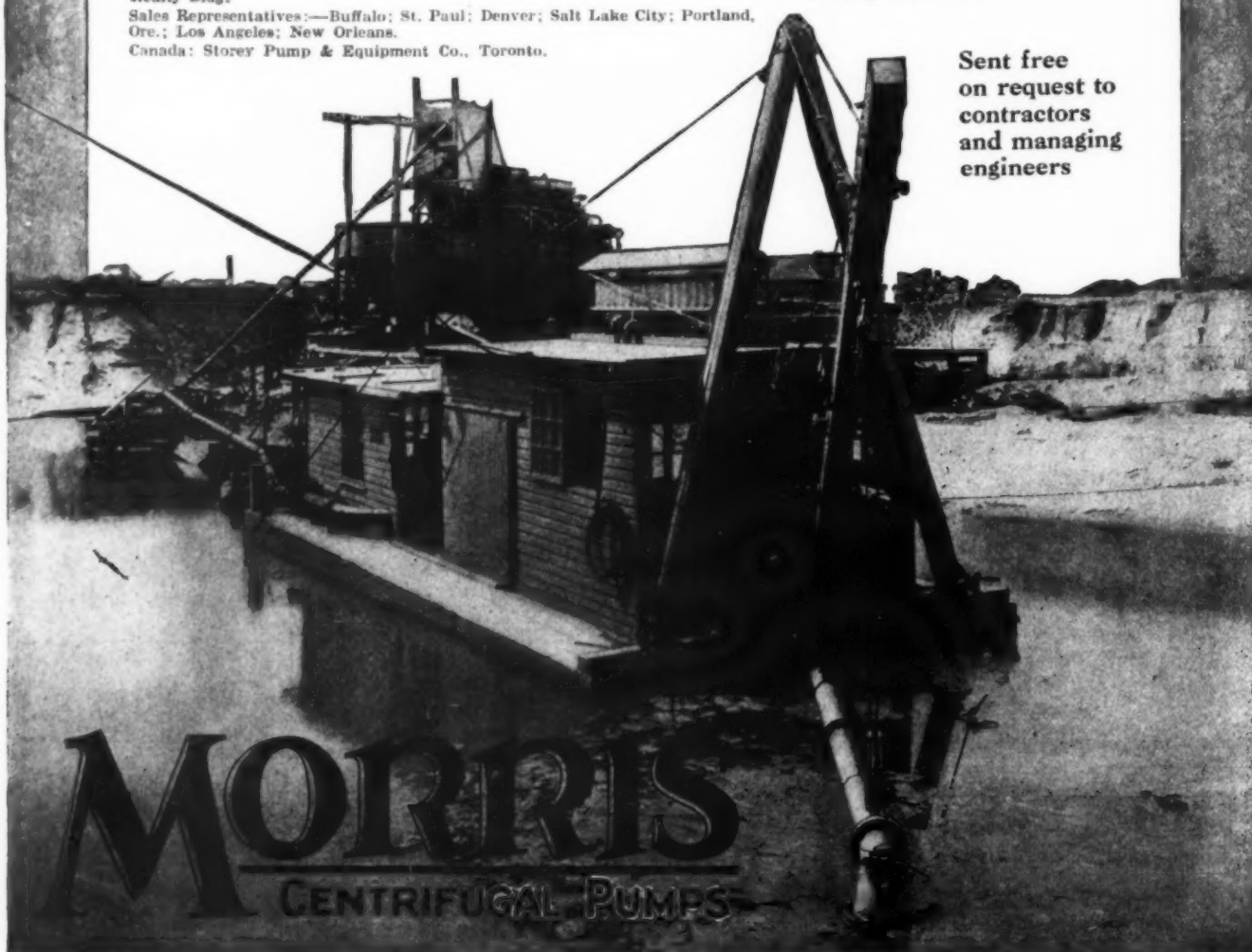
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56 pages with over 125 illustrations showing where, why and how hydraulic methods should be used. This book will post you on the best modern practice, what can be done with pumping outfits of various types and sizes and what arrangement is most desirable under existing conditions.

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and managing  
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OVER two years ago, a year ahead of any other manufacturer, Foote built and placed on the market the first 6-bag paver in answer to the needs of the American Road contractor.

Foote led the way, Foote did the experimenting, opened up the difficulties,

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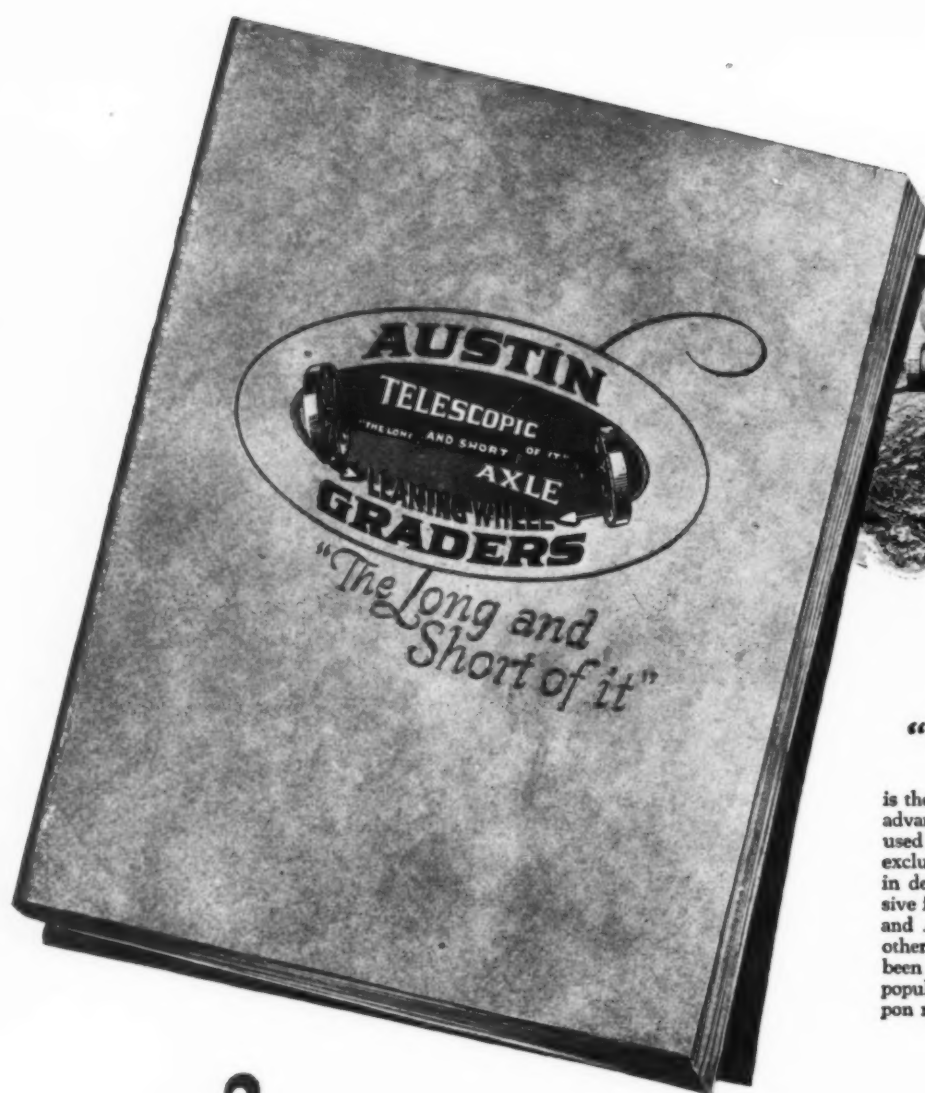
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*"the Long and Short of it"*

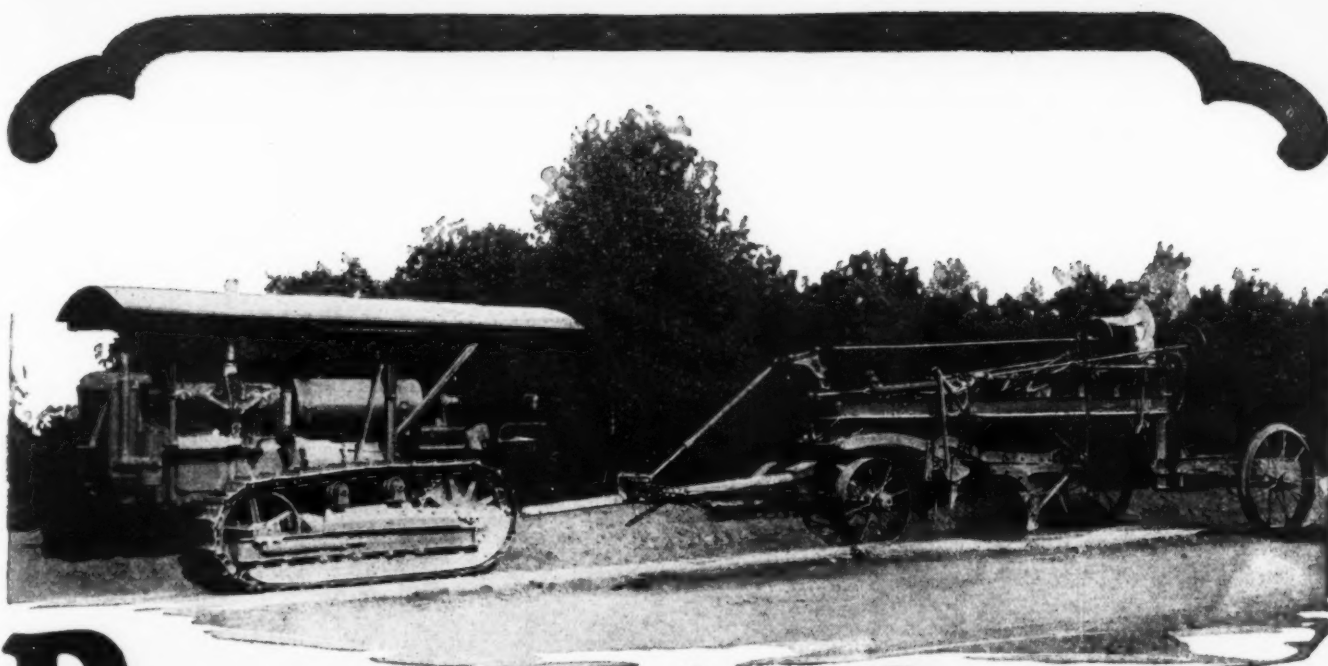
Please send me a copy of your new Austin Leaning Wheel Grader Catalog, "The Long and Short of it."

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But tomorrow there may be slippery mud or stiff grades to conquer; tons of earth to move; trees to uproot; boulders to unseat; old pavement to shatter.

Then resistless reserve power roars into action! Watch the "Caterpillar" thrust its sure-footed way through or over every obstacle! Watch it dig through—saving time and cutting costs.

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**F**AST swing — and no hesitating uncertainty in stopping and dumping the dipper. Precision and speed every second!

No nibbling when the dipper goes after its load. It bites deep—takes a heaping load. Why? Because independent crowd puts power behind the dipper to drive it deep! That's a big time saver!

Crowds above and beyond end of the boom!

Ready for anything at command of the levers without adjustment — high bank work, deep digging, high dumping, shallow stripping!

**Finger Tip Control**—that's one of the reasons for precision — as well as for speed!

**Know the Koehring**—its Heavy Duty construction — speed! *Write for Koehring Shovel Bulletin No. 517*

**Shovel Capacities**

Line-of-plate struck measure.

Quickly convertible to crane or dragline.

No. 301—19'-6" Boom.  $\frac{5}{8}$  Yd. Dipper on 19' Dipper Sticks;  $\frac{3}{4}$  Yd. Dipper on 16' Dipper Sticks; 1 Yd. Dipper on 13' Dipper Sticks.

Shock absorber on boom. Wisconsin four cylinder gasoline engine,  $5\frac{1}{4}$ " x  $6\frac{1}{2}$ ", 1,000 R. P. M.

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Send for your copy today. It may show the way to cheaper loading.

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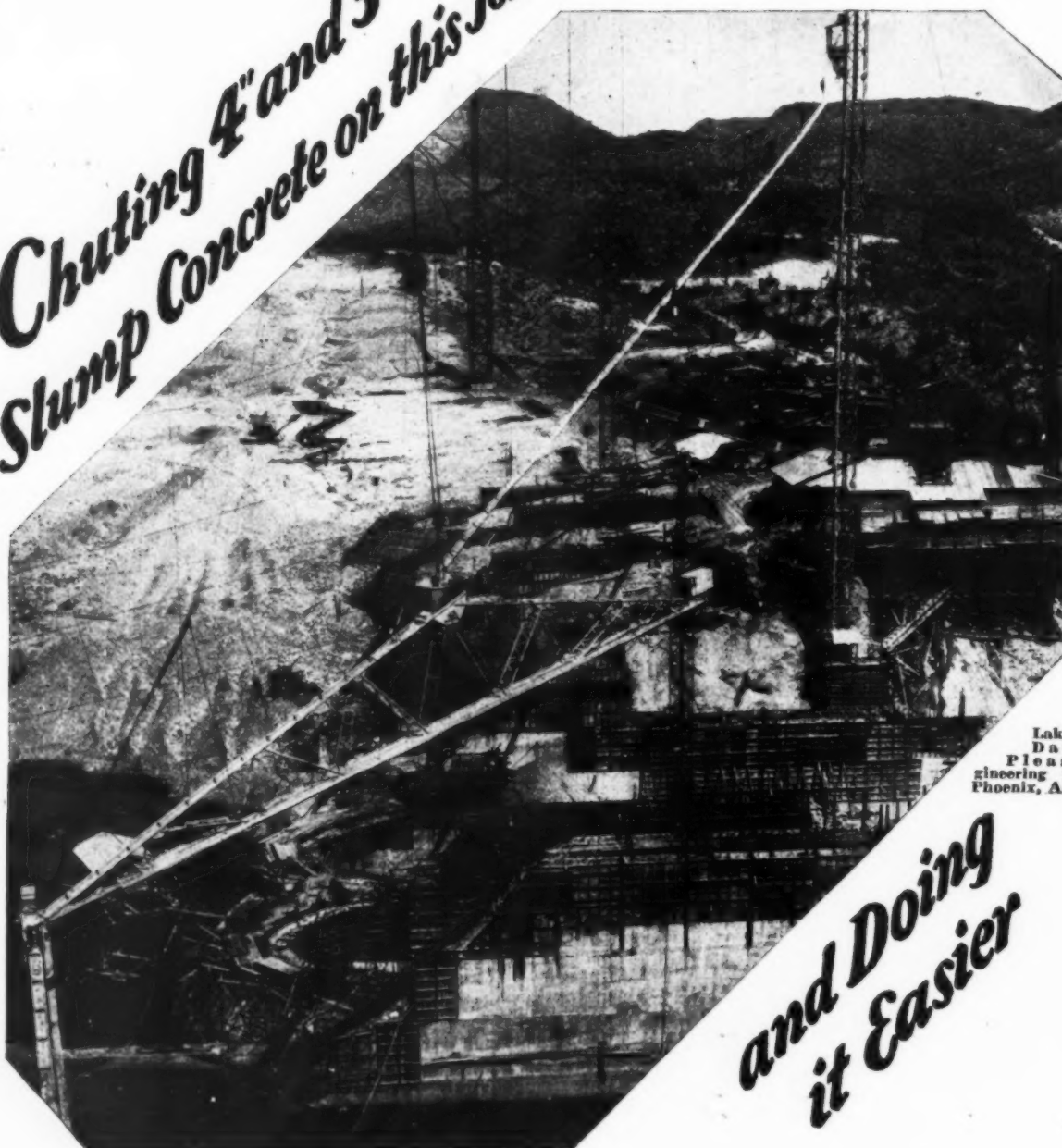
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City .....

State.....



**Chuting 4" and 5"  
Slump Concrete on this Job**

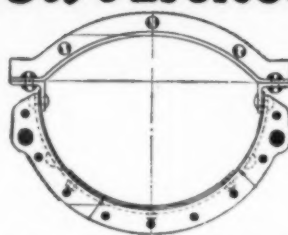


Lake Pleasant  
Dam, Carl  
Pleasant, En-  
gineering Contractor,  
Phoenix, Arizona.

**and Doing  
it Easier**

## **With Lakewood Arched Band Chute**

Because of the half-round "wide-open" cross section of Lakewood Chute which decreases the wedging action—an important feature in the chuting of dryer concrete.



Lakewood 14 in. Arched Band Chute  
handles 75 yards per hour. 18 in.  
handles 175 to 200 yards per hour.

Towers and Chuting Lakewood Mixers, Steel Equipment were used on this work, including four 75-foot counterweight chute sections.

Ask for Bulletin 23 S

# **THE LAKEWOOD ENGINEERING COMPANY**

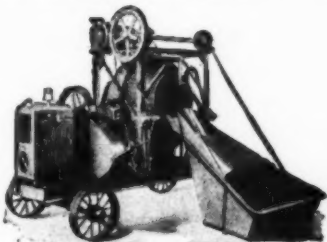
*Paving & Construction Equipment*  
**Cleveland, Ohio**

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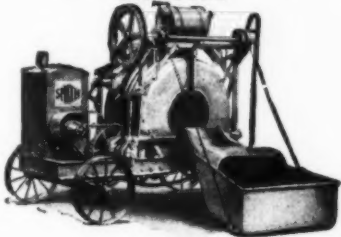
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## Getting Contracts —BUT— Are You Worried



The Smith 10-S Tilting Mixer with power loader and water tank. Two-bag batch capacity on 1-2-4 work



7-S (one-bag) Non-Tilting Mixer with power loader. One bag batch capacity up to 1-3-6 proportions. Fast discharge



The Smith (2 1/2-S) Mascot. Capacity 25 to 40 cu. yd. per day. The same speed and dependability typical of the larger Smiths



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Sales Offices and Service Stations in All Principal Cities

Smith Tilting Mixers are built in the following sizes: 2 1/2, 3 1/2, 5, 7, 10, 14, 21, 28, 40, 56 and 112 cu. ft. per batch; Smith Non-Tilting Mixers: 5, 7, 10, 14, 21 and 28 cu. ft. per batch; Smith Paving Mixers: 27-E.

Our new Catalog 526 is complete and well illustrated. Get a copy—clip this coupon reminder now so that you won't forget.



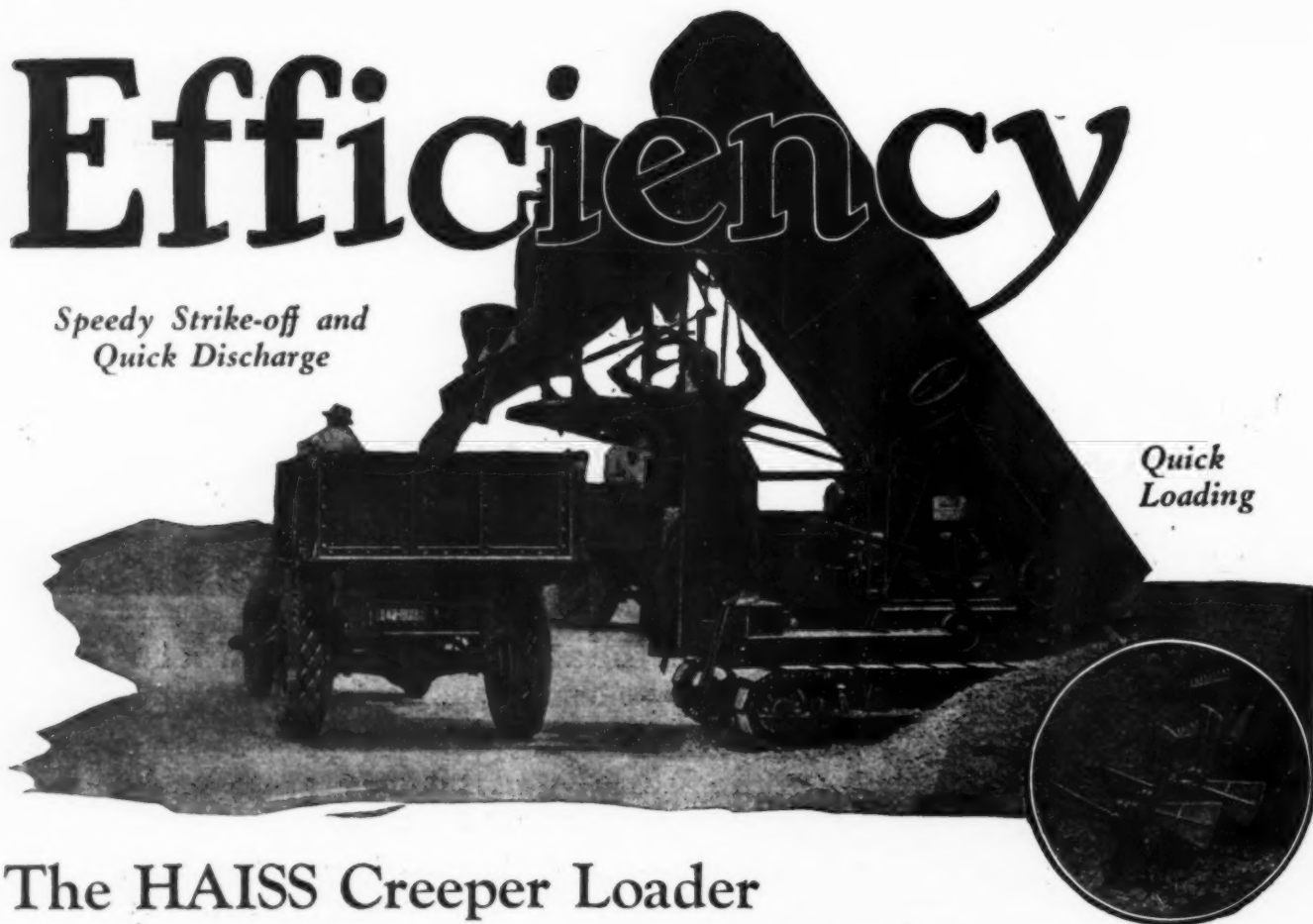
# SMITH MIXERS

THE T. L. SMITH COMPANY  
Milwaukee, Wisconsin  
Please send me a copy of your Mixer Catalog No. 526.  
We are especially interested in \_\_\_\_\_ mixer.  
(Size of mixer)  
Name \_\_\_\_\_ Address \_\_\_\_\_ City \_\_\_\_\_ State \_\_\_\_\_  
Date \_\_\_\_\_

# Efficiency

*Speedy Strike-off and  
Quick Discharge*

*Quick  
Loading*



The HAISS Creeper Loader  
and HAISS Precision Measuring Hopper  
are Geared to the Highest Speed of a 27E Paver

*For Stockpile Loading  
Light Grading  
Excavating Sand  
Digging Pit Gravel  
Loading Spoil  
Grading Alleys  
and general utility*

HAISS PRODUCTS  
include also

Portable Belt Conveyors for general  
utility.

Haiss Clamshell Buckets of power  
wheel, lever arm and block and  
tackle types of closing gear.

Elevators, Screens and Conveyors for  
sand, gravel and crushed stone plants.  
Hopper Gates, Chutes and kindred  
equipment.

The George Haiss  
Manufacturing Co., Inc.  
139th Street and Rider Avenue  
New York, N. Y.

Yes, and with a 37 second cycle for the stone loading, strike-off, discharge and reset operation the Haiss Creeper Loader with Precision Measuring Hopper has something over 100% safety factor. Or, to put it another way, if you had trucks enough one Haiss Loader would batch aggregates for two pavers.

The speed in a Haiss Loader comes from the design of all elements for equally high efficiency. And this efficiency is in ease of operation as well as in mechanical excellence. From the positive feeding paddles to the quick-acting hopper discharge the machine moves sand and stone at a rate of some 2 yards a minute.

*Ask for your copy of Catalog 523.*

# HAISS

# Dig Dollars Out of Ditches with the BEAR CAT



## *It Digs More Dirt Per Dollar*

**C**HECK it up for yourself. The Bear Cat Ditcher, trench hoe, or whatever you please to call it, digs and moves at a speed that means real money saved and results accomplished.

One man operation, extreme mobility on its full crawlers, plenty of dependable power, and staunch steel construction that stands up—no wonder the Bear Cat leads its field in sales.

Digs any width, any depth to 16 feet. Interchangeable attachments furnished at any time.

We can make shipment same day your order is received.

Write, wire or send coupon.

**BYERS MACHINE COMPANY**  
RAVENNA, OHIO

*Builders also of Byers Truckcrane*  
Sales and Service Throughout  
the Country

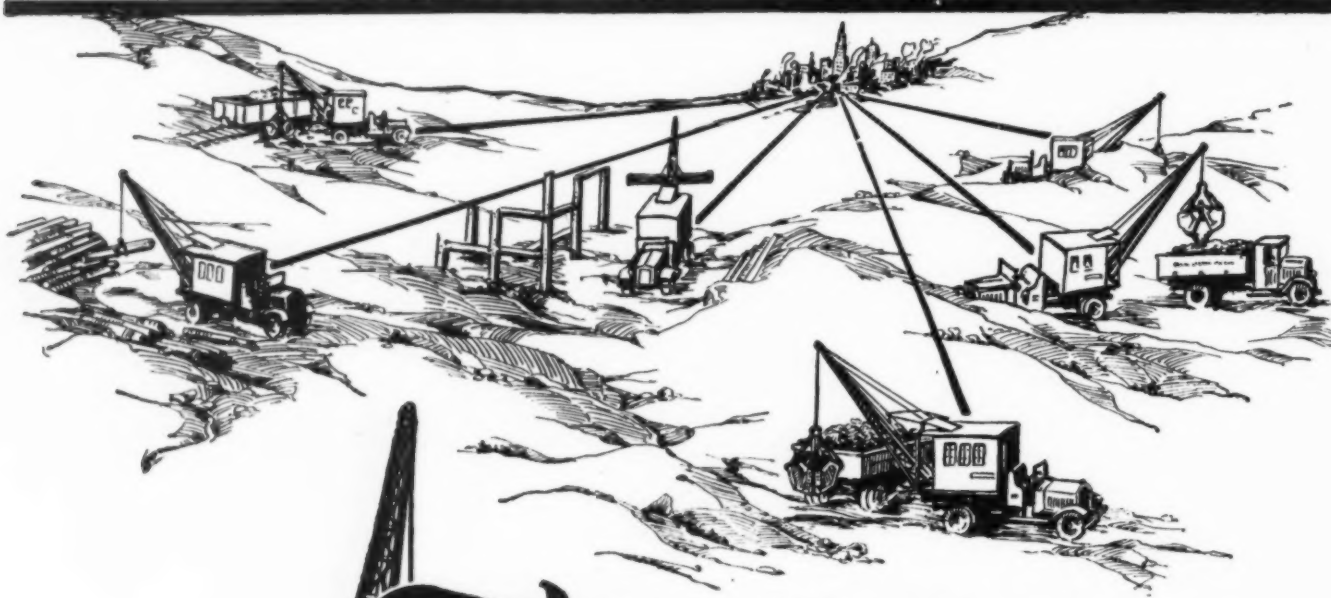


# **BYERS BEAR CAT**

**THE ALL-PURPOSE ONE MAN CRANE-SHOVEL-DITCHER**

**BYERS MACHINE CO.** *Ravenna, Ohio*  
Gentlemen:—  
Please send me the new Bear Cat Book. The type  
of work I am particularly interested in is \_\_\_\_\_  
Name \_\_\_\_\_ Address \_\_\_\_\_  
Town \_\_\_\_\_ State \_\_\_\_\_ SM 9-27

# ANY JOB, ANYWHERE, ANYTIME



**T**HE OPERATING radius of a Browning Truck Crane is practically unlimited. You can use it any place you can drive a truck; you can move it from job to job in a hurry; you can put it on any kind of handling work and make it pay for itself by its utility.

A Browning Truck Crane is the crane of a thousand and one uses—simple, sturdy and as easy to handle as the truck itself.

**THE BROWNING CRANE COMPANY**  
 16226 Waterloo Rd. ∴ CLEVELAND, OHIO, U. S. A.  
 NEW YORK PHILADELPHIA CHICAGO PITTSBURGH  
 BIRMINGHAM ST. LOUIS

*Sales Agents:*  
 Portland Los Angeles San Francisco Montreal London, England

# BROWNING

## TRUCK CRANES

PERMANENT AS  
THE PYRAMIDS  
OF EGYPT



Hydro  
Proof

### Enduring!

THE ancient Egyptians used asphalt in the foundations for the Pyramids. That the pyramids still stand intact, after thousands of years exposed to suns, winds and storms of the tropics, is proof of the enduring qualities of asphalt.

As the pyramids of Egypt have withstood the ever-varying tropical temperatures, so has Hydro-Proof shown comparable resistance to heavy trucking and other traffic.

Hydro-Proof is pure asphalt—atomized and suspended in water. When applied according to our 1 2 3 Formula, Hydro-Proof permanently repairs or resurfaces concrete, brick, wooden block and other floors. It is resilient; feels good to walk upon. It is proof against moisture, acids, chemicals, alkali, is spark-proof and dustless. No chipping out of old material is necessary in preparing concrete or brick floors for repairs. 1 2 3 Hydro-Proof can be laid to a feather edge.

When your floors or driveways need repairing, try a sample of our 1 2 3 Hydro-Proof. No matter what your previous experiences have been, you'll find Hydro-Proof the most economical and satisfactory floor-resurfacing material you've ever used. We'll gladly send you a working sample and our 1 2 3 Hydro-Proof Formula, free.

The Asphalt Products Co., 704 FREE STREET, SYRACUSE, N. Y.

Please send me a working sample of HYDRO-PROOF and your 123 Formula, without placing me under any obligations. 704F.

Name.....

Address.....

The World's Most  
Enduring Material



1 or 1½ yards, \$80

*If it's an EASTON it  
Dumps to a Sixty Degree Angle*



1½ cu. yards, \$250

# EASTON

Bodies and Trailers  
are dependable Time Savers—  
for Contractors

You load them quick and they'll un-  
load themselves in ten seconds.

Write us for the name of the nearest user of  
Easton units—*Ask the man who uses them.*

**Easton Car & Construction Co.**  
**Easton, Pa.**

## No Other POWER EXHIBIT Like This!

Here under one roof is an interesting display of over 200 exhibits of industrial, agricultural and commercial units, built to operate with the Fordson tractor and Ford chassis.

This exhibit occupies two entire floors of the Ford building at 1710 Broadway. Nowhere else is it possible to quickly and conveniently see all the equipment for use with Ford units.

If you use power in your business, you will see much to interest you. Ford equipment means economy—come today—and see this exhibit.

*Descriptive Circular furnished gratis  
on any of the above equipment.*

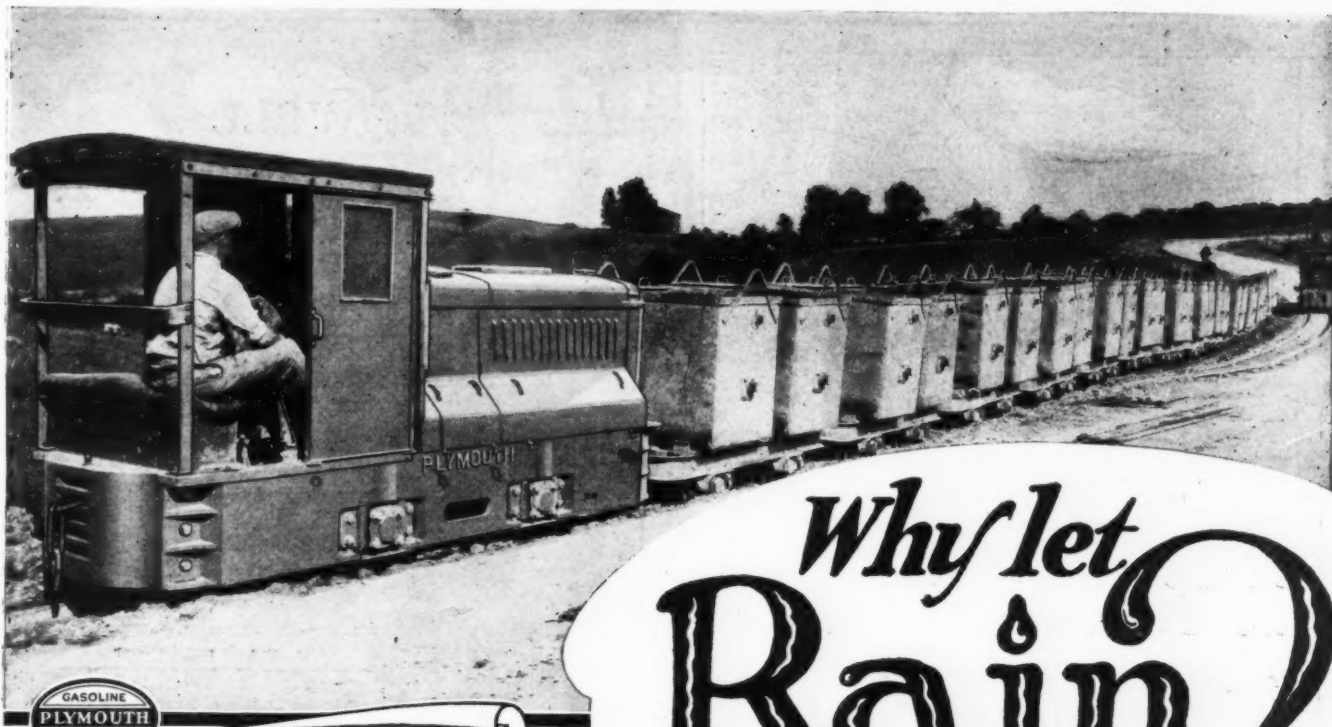
### POWER EQUIPMENT EXPOSITION

Ford Motor Building

54th Street and Broadway, New York

The following are a few of the groups of equipment that can be seen on display:

Graders	Shop Trailers
Snow Plows	Agricultural
Locomotives	Implements
Lawn Mowers	Marine
Dump Trailers	Attachments
Tank Bodies	Air Compressors
Dump Bodies	Commercial
Road Rollers	Bodies
Street Sweepers	Cranes
Backfillers	Hoists
Concrete Mixers	Pumps
Caterpillars	Loaders
Stump Pullers	Shovels
Log Skidders	Wood Saws
Scoops	Saw Mills
Scrapers	Suburban Bodies
Tractor Trailers	Motor Boats



**THE HILL & HILL COMPANY**  
CONTRACTORS  
ELYRIA, OHIO

Nov. 12, 1926.

The Fate-Root-Heath Co.,  
Plymouth, Ohio.

Att'n Mr. J. A. Root, President.

Gentlemen:

The Locomotive shown in the foreground is one of the first ones we purchased nearly three years ago.

This picture does not show the topography of the land clearly—at the point from which the photo was taken, the road rests on a 19 foot fill and continues beyond the limits of the picture. At a point fifty feet beyond the further locomotive, the road has a 7% grade for 1600 feet; this is the longest, but not the steepest; one being 9% and one 8% for 1300 feet.

From the commencement of the rains until the completion of the concrete on October 16th, trucks could not have delivered materials directly to the mixer over the subgrade except for possibly scattered periods aggregating ten days.

The work consisted of 11½ miles of 18 foot, 9 in. - 7 in. - 9 in. concrete, with fifty-one widened curves, 29,582 feet of straight vertical grades and 31,311 feet of vertical curves.

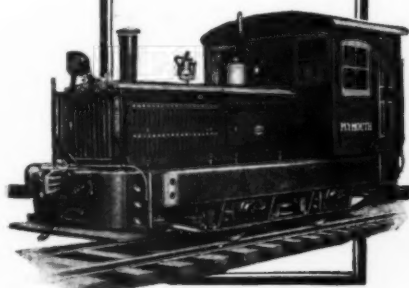
Records on such a job could not be made but we give great credit for the present completion to the practically troubleless service obtained from our four Plymouth 8-ton Locomotives.

Very truly yours,

*J. E. Hill*  
President.

The PLYMOUTH 24-ton  
specially designed for  
heavy hauling jobs.

If It's a Track Haulage Problem  
There's a PLYMOUTH to Solve It



# Why let Rain?

## Put the Skids Under Your PROFITS

Are you taking a chance with a good contract tucked away in your pocket—risking profits on luck and good weather? What do truck loads of materials "stuck in the mud" cost you and how often have you said, "If I just have a dry season?"

Now is the time to get set for the safe way, the sure way, the profit-making way. No man has a contract for dry weather.

Track haulage gets you over the sink holes, it puts materials on the spot, rain or shine, it keeps the road building equipment and workmen supplied every working hour.

You will have jobs where track haulage and Plymouth Gasoline Locomotives will assure you the profit you figured.

PLYMOUTH LOCOMOTIVE WORKS  
The Fate-Root-Heath Company  
PLYMOUTH, OHIO

# PLYMOUTH

Gasoline Locomotives



Operating two Cleveland C-6 Paving Breakers from a 100-ft. compressor on a street railway job

## Competitive test proves Cleveland Paving Breakers **CUT FASTER**

One of our customers who already had eight Cleveland C6 Paving Breakers, conducted a competitive test to determine the most efficient type of paving breaker for all-round work. It consisted of tearing up a reinforced concrete floor six to eight inches thick.

In this test all the machines used about the same amount of air, but the Cleveland C6 averaged 23% to 35% more work per minute.

As a result of this test, we received an order for 10 more Cleveland C6 Paving Breakers from this customer.

This should go a long way toward helping you decide which paving breaker to pick.

*Ask for Bulletin "C-6-A."*

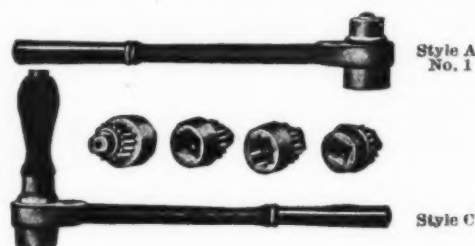
**The Cleveland Rock Drill Co.**  
3734 East 78th Street, Cleveland, Ohio

Chicago, Ill., 608 S. Dearborn St.  
Detroit, Mich., 428 Insurance Exchange Bldg.  
New York City, 36 Church St.  
St. Louis, Mo., 2091 Railway Exchange Bldg.  
Philadelphia, Pa., The Bourse Bldg.  
Birmingham, Ala., 403 N. 24th St., Box 2028.  
Pittsburgh, Pa., 922 Farmers Bank Bldg.  
Negaunee, Mich., 222 Heath St.  
British Representative: John MacDonald & Company, Pollokshaws, Glasgow, Scotland

# CLEVELAND ROCK DRILLS

## It's the **LOWELL** Reversible Ratchet Wrench

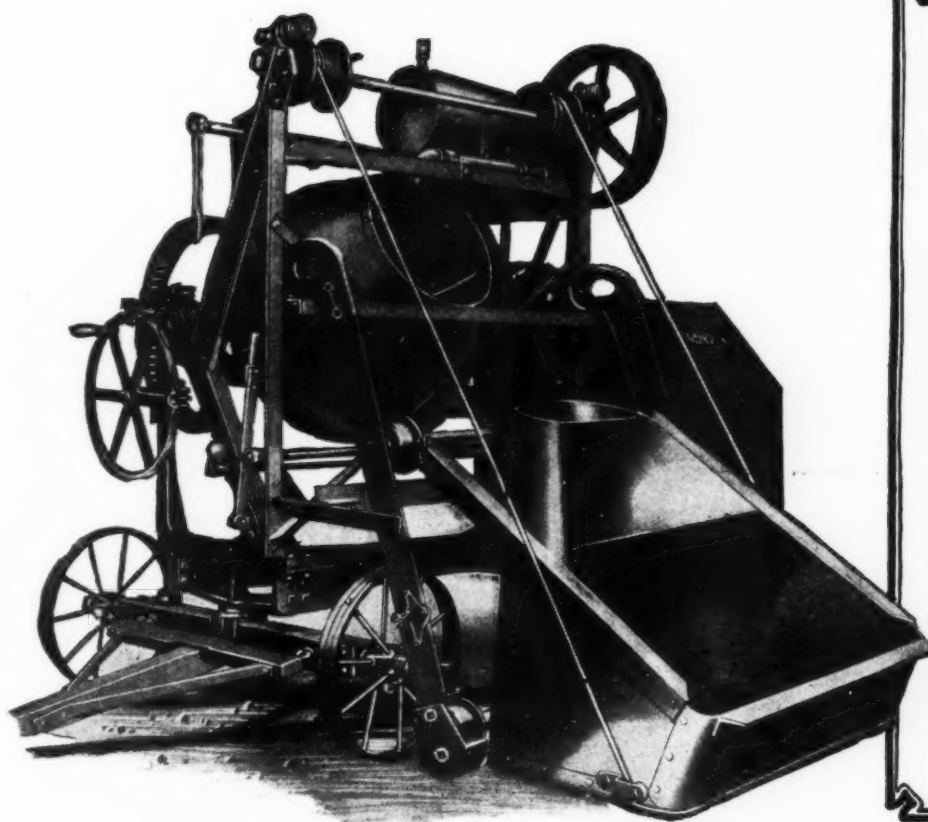
A General Purpose Pattern  
Known as  
**THE LAG SCREW WRENCH**



No.	Length of Handle Inches	Approx. Weight, Lbs.	For Nuts Short Diameter	
			Square	Hexagon
1	12	2½	¾ taper, 1½, 5⁄8, 1, 1 1⁄8, 1 1⁄4, 1 1⁄2, 1 3⁄4, 1 7⁄8, 2, 2 1⁄8, 2 1⁄4, 2 1⁄2, 2 3⁄4, 3, 3 1⁄4, 3 1⁄2, 3 3⁄4, 4, 4 1⁄4, 4 1⁄2, 4 3⁄4, 5, 5 1⁄4, 5 1⁄2, 5 3⁄4, 6, 6 1⁄4, 6 1⁄2, 6 3⁄4, 7, 7 1⁄4, 7 1⁄2, 7 3⁄4, 8, 8 1⁄4, 8 1⁄2, 8 3⁄4, 9, 9 1⁄4, 9 1⁄2, 9 3⁄4, 10, 10 1⁄4, 10 1⁄2, 10 3⁄4, 11, 11 1⁄4, 11 1⁄2, 11 3⁄4, 12, 12 1⁄4, 12 1⁄2, 12 3⁄4, 13, 13 1⁄4, 13 1⁄2, 13 3⁄4, 14, 14 1⁄4, 14 1⁄2, 14 3⁄4, 15, 15 1⁄4, 15 1⁄2, 15 3⁄4, 16, 16 1⁄4, 16 1⁄2, 16 3⁄4, 17, 17 1⁄4, 17 1⁄2, 17 3⁄4, 18, 18 1⁄4, 18 1⁄2, 18 3⁄4, 19, 19 1⁄4, 19 1⁄2, 19 3⁄4, 20, 20 1⁄4, 20 1⁄2, 20 3⁄4, 21, 21 1⁄4, 21 1⁄2, 21 3⁄4, 22, 22 1⁄4, 22 1⁄2, 22 3⁄4, 23, 23 1⁄4, 23 1⁄2, 23 3⁄4, 24, 24 1⁄4, 24 1⁄2, 24 3⁄4, 25, 25 1⁄4, 25 1⁄2, 25 3⁄4, 26, 26 1⁄4, 26 1⁄2, 26 3⁄4, 27, 27 1⁄4, 27 1⁄2, 27 3⁄4, 28, 28 1⁄4, 28 1⁄2, 28 3⁄4, 29, 29 1⁄4, 29 1⁄2, 29 3⁄4, 30, 30 1⁄4, 30 1⁄2, 30 3⁄4, 31, 31 1⁄4, 31 1⁄2, 31 3⁄4, 32, 32 1⁄4, 32 1⁄2, 32 3⁄4, 33, 33 1⁄4, 33 1⁄2, 33 3⁄4, 34, 34 1⁄4, 34 1⁄2, 34 3⁄4, 35, 35 1⁄4, 35 1⁄2, 35 3⁄4, 36, 36 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# WONDER 5-S

## A NEW MIXER VALUE



### Outstanding WONDER Features

Distinctive shaped mixing drum revolving on a nest of ball bearings.

Mixing drum bearing guaranteed for the life of mixer.

Perfectly balanced mixing drum, tilts easily and quickly.

Thrust screw type loader clutch.

Main drive shaft supported in 4½" bronze bearing on one end, and 7" babbitted bearing on the other.

Track type loader—easily extended any time.

High grade industrial power plant—magneto equipped.

Alemite lubrication.

Engine house with full opening, ventilated doors.

Low, wide, quick discharging loader skip.

Hot pressed I-beam skids.

**D**O YOU KNOW another mixer that embodies so many advanced engineering features as the **WONDER** "5-S" at anywhere near its price? It has a capacity of five cubic feet of mixed concrete per batch—a one bag mixer up to and including a 1-2½-4 mix.

Compare the **WONDER** "5-S" with any other mixer of its size on the market!

That's the easiest and best way to select the right mixer. For simplicity—long life—successful performance—speedy operation—the **WONDER** "5-S" has no equal.

The **WONDER** catalog clearly pictures and describes. It will assist you in your selection and will gladly be sent upon request without obligation. Also ask for new low prices!

**Construction Machinery Co., Waterloo, Iowa, U.S.A.**

# AUTO TRUCK DERRICK

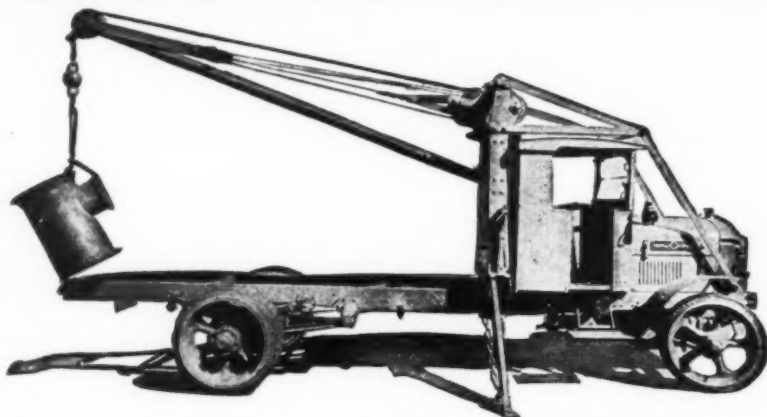
## HOISTS...LOADS... DIGS

**C**ONVERT your truck into a TIME and LABOR saver with this derrick. It will serve many purposes if mounted on a chassis of sufficient tonnage.

With HOOK or CHAINS, it lifts pipes, girders and other solid objects. With LAZY TONGS it handles barrels, bales, boxes, crates, etc. With CLAM SHELL or ORANGE PEEL bucket it loads stone, gravel, sand, coal and other soft or loose material.

ONE OPERATOR standing on truck has absolute control over the load and its placement.

The construction of this derrick is such that it can be knocked down, packed compactly and shipped anywhere. Derrick has large factor of safety over specified capacity. Protection from breakage due to overload is insured by



patented slipping clutch set to lift slightly in excess of rated capacity.

Operation of clam or orange peel bucket is simple, any unskilled workman can operate this machine and it will also do the work of vertical hoists on trucks for raising and lowering body.

Prices and fuller details will be sent on request. Certain territory still available for first class Distributors. Correspondence invited.

**ATIA CORPORATION, 150 Broadway, New York, U.S.A.**

*Also ATIA Ash and Garbage Removal Bodies*

# INDEPENDENT

## Reinforced Concrete Sewer Pipe

### Backed by SERVICE

When "INDEPENDENT" supplies the pipe for a concrete sewer, the contractor gets the kind of material and service that mean a more profitable job for him, and a more permanent sewer for the community.

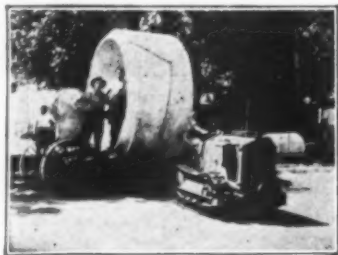
He gets his pipe promptly—pipe are manufactured in a special plant on the job, or near by and delivered ready to lay. He gets highest quality pipe, backed by the largest exclusive builder of reinforced concrete sewer pipe. He gets pipe that are easier to lay—the "Recessed Joint" saves time, labor and money, and makes a better job.

Get our quotations on your prospective concrete sewer jobs. Write, wire or phone (Main 2131).

**INDEPENDENT CONCRETE PIPE CO.**  
209 N. West St., Indianapolis, Ind.  
Sales Agencies in Principal Cities



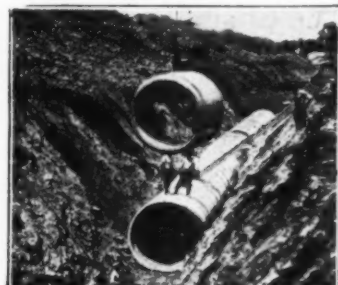
*Building INDEPENDENT Concrete Sewer Pipe in a central yard.*



*Delivering 96-inch Concrete Sewer Pipe from yard to trench.*



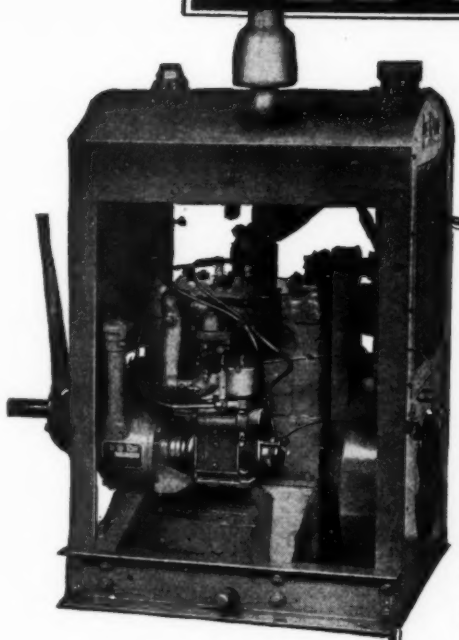
*INDEPENDENT Concrete Pipe delivered to the site of a sewer.*



*Laying a line of INDEPENDENT 84-inch Concrete Sewer Pipe.*

# LE ROI ENGINES

are  
Eisemann Equipped!



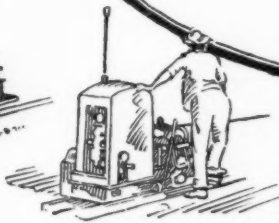
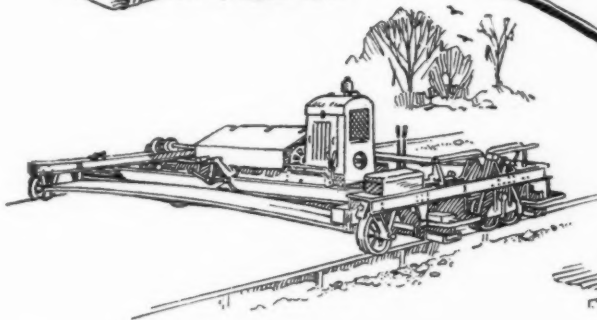
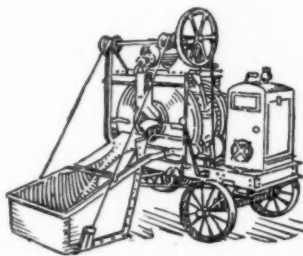
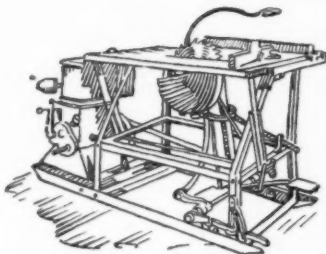
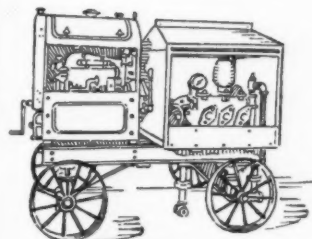
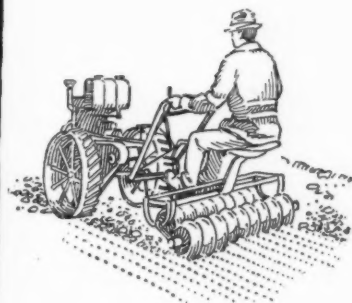
WHEREVER construction work is under way, there, almost invariably you will find one or more Le Roi Engines.

Mixers, pumps, hoists—there is hardly a class of service in which Le Roi Engines are not employed.

A hundred-odd makers of equipment now use Le Roi power, and the list of users is still growing.

Such widespread use must be indicative of user-satisfaction. And the trouble-free ignition system, with which all Le Roi Engines are equipped, accounts—in a measure—for this user-satisfaction.

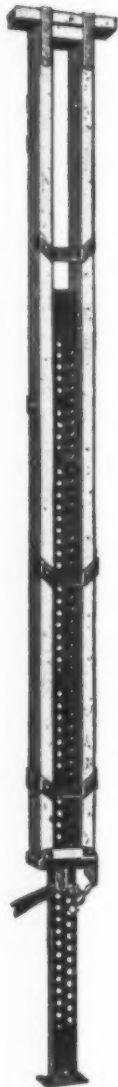
EISEMANN MAGNETO CORPORATION  
165 BROADWAY - NEW YORK  
Detroit - San Francisco - Chicago



# EISEMANN

## ELECTRICAL EQUIPMENT

# SURE-GRIP



## 10 SECOND ADJUSTABLE SHORES

Positive, fool-proof, pin adjustment shore, that can not slip or settle under load.

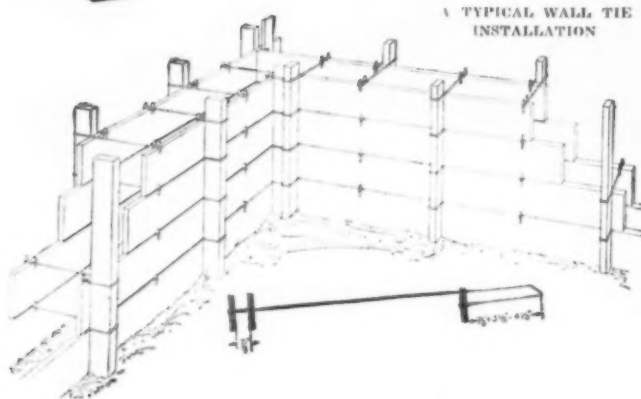
Combines ease and speed of operation.

Requires no loose tools of any description for its operation.

Easily stacked and handled.

## WALL TIE AND SPREADER

SURE GRIP Wall Ties and Spreaders eliminate the buying and forming of wire, material and labor making wood spreaders, placing of spreaders, fishing spreaders from forms as concrete is poured, half the studding and one half the labor necessary in old method of wall form erection.



A TYPICAL WALL TIE  
INSTALLATION

**The Dayton Sure Grip & Shore Co.**  
DAYTON, OHIO

The Dayton Sure Grip & Shore Co., Dayton, O.

Gentlemen:

We are interested in Sure Grip Shores ☐, Wall Ties and Spreaders ☐, Concrete Inserts ☐, Sleeper and Furring Anchors ☐. Please mail us prices and catalogue.

Name \_\_\_\_\_

Address \_\_\_\_\_



## On the Job

Speed up the work. Cut down demurrage charges. A MID-WEST Gasoline Switcher will do it for you at trifling cost and on a small investment.

Move the cars when you want to, don't wait for the railroad switcher. A MID-WEST will often pay for itself thru the indirect savings on a single job.

Made in various sizes and can be equipped with railroad couplers. Lastly, they are built right too,—the kind that you can forget is on the job.

**MID-WEST LOCOMOTIVE WORKS**  
Cincinnati, Ohio



## Making Every Digging Job Pay More Profit

"Our costs per cubic yard of material excavated on three jobs where we have used a Sauerman Power Drag Scraper average over 40% lower than our costs on similar work before we had this machine," writes the superintendent of a large construction company.

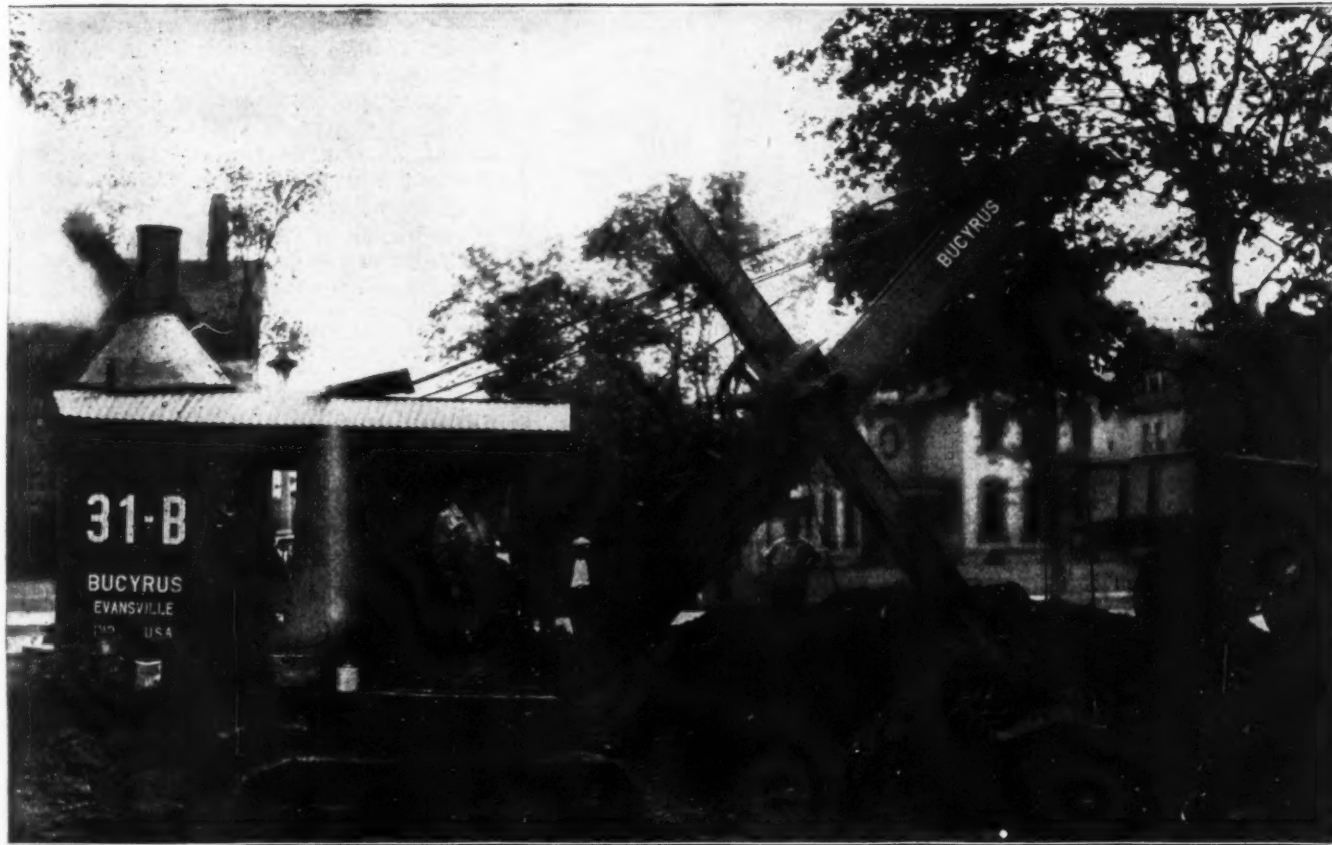
The Sauerman Scraper is light and compact—yet capable of handling the toughest jobs. It digs the material and conveys 30 to 50 loads per hour to the hopper or spoil pile. It has a small power requirement. Its maintenance costs are low. And one man handles all the operating.

A complete range of sizes from  $\frac{1}{4}$  to 10 cu. yd., meets the capacity requirements of every excavating job from the smallest to the largest.

To learn more about the profit-making ability of Sauerman Power Drag Scrapers, send for a copy of Pamphlet No. 24.

Sauerman Bros., Inc., 480 S. Clinton St., Chicago

## Digging 2 Yards of Dirt per Minute—All Day Long



## Faster Swing — Faster Hoist — More Dirt

This new 1-yard 31-B Steam Shovel loaded out as high as 42 trucks per hour—5 dippers-full to the truck on this job. That's Bucyrus digging speed.

This performance means that the Bucyrus two-part hoist is faster—that the hoisting engine has ample power.

The 31-B can hoist a loaded dipper through the bank and to the dumping position faster. It can swing a loaded dipper faster,

On a recent basement job this 1-yd. 31-B Steamer dug 900 yards of dirt in 7 hours—that's 129 yards per hour or 2 yards per minute.



making speed count for extra yardages. These fast motions are the big operating differences between little yardages and big ones—between high costs per yard and low costs—between other 1-yard shovels and the Bucyrus 31-B.

If you are interested in a new shovel that can move 129 yards of dirt per hour at a lower cost per yard, send for the new C-311-2, Bigger Yardage Bulletin. Just drop us a card.

making speed count for extra yardages. These fast motions are the big operating differences between little yardages and big ones—between high costs per yard and low costs—between other 1-yard shovels and the Bucyrus 31-B.

BUCYRUS COMPANY, South Milwaukee, Wisconsin

# BUCYRUS

NEW YORK

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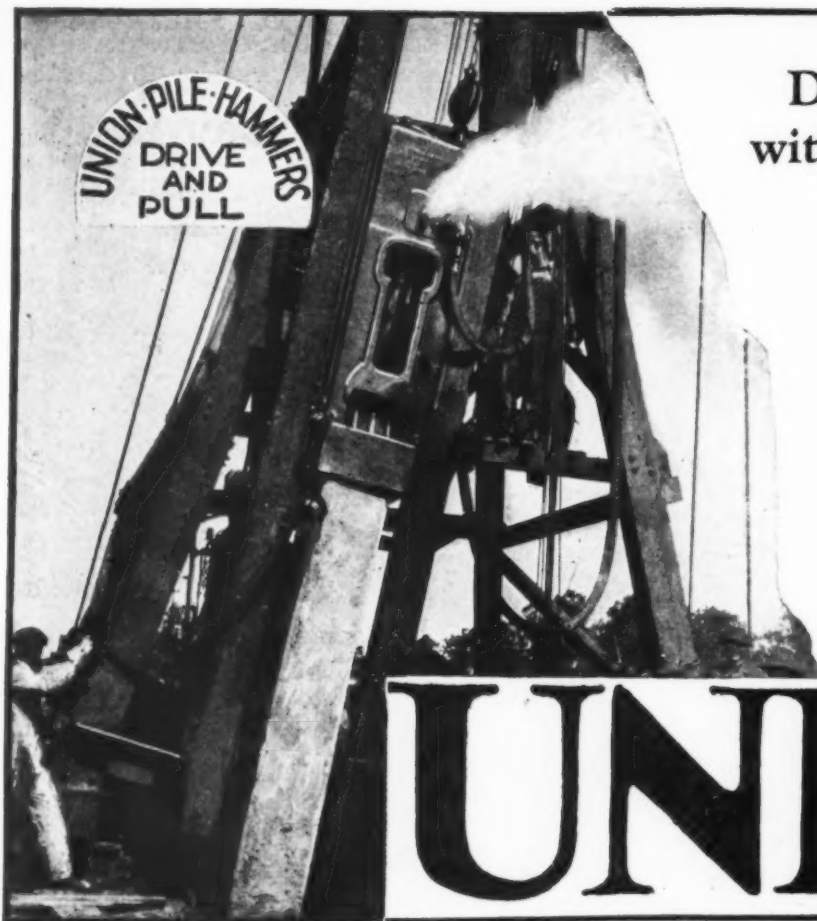
BIRMINGHAM

SAN FRANCISCO

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## Driving concrete piles without damage to heads

Here you see a size 1 Union Hammer driving 18-in. square concrete piles on a bridge job over the Suwannee River in Florida. The contractor reported that he drove 100 of these piles to a penetration of 20 to 30 ft., through sand and clay and 5 ft. into soft rock—without damaging or cracking a single pile.

"The hammer worked without a moment's delay from start to finish," he said.

This illustrates what you may expect from Union Hammers—built in 9 sizes, covering all pile driving requirements.

Write for "Contractors' Equipment Bulletin" 63.

**UNION IRON WORKS, Inc.**  
Monroe and Grove Sts.,  
Hoboken, N. J.

# UNION

## To Fill Any Form



The Stuebner Controllable Concrete Bucket with its patented device for regulating the width of discharge opening is extremely useful when you are filling narrow or inconveniently located forms.

It is a genuine time saving piece of equipment which pays for itself by stopping the waste of material. Write for information.

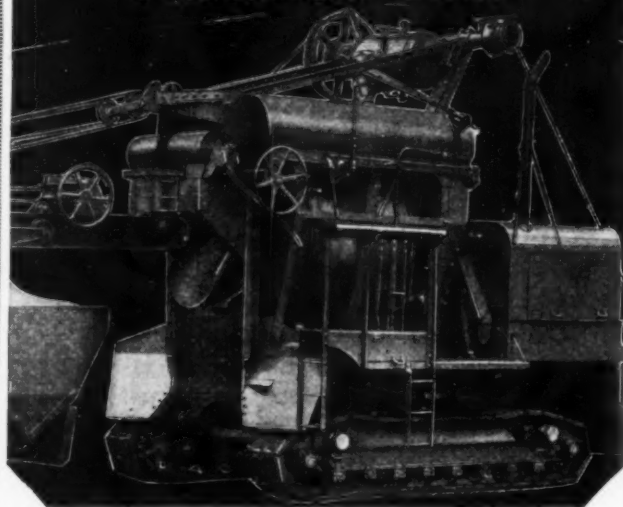
Turn-over and Bottom Dumping Buckets,  
Flat Cars, Push Carts, Steel Skips,  
End and Bottom Discharge Cars.

**G. L. Stuebner Iron Works**

Incorporated

West 12th St. and Vernon Blyd., Long Island City, N. Y.

## The Finest, Fastest Paver Ever Built



Climb on the platform of the new Rex 27-E and try the controls yourself—time every operation—check the specifications and you will understand why we call this New Rex "The Finest, Fastest Paver ever Built." Ask for a catalog on it.

CHAIN BELT COMPANY, 764 Park Street, Milwaukee

# REX

# THE INSLEY EXCAVATOR

for SHOVEL · DITCHER · CRANE  
SKIMMER AND DRAGLINE WORK

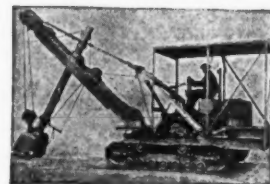


## "Have Had It on Some Very Tough Jobs"

HERE it is on one of them. This Insley Excavator, owned by the Wickham Construction Company, has been taking things as they come in and around Cincinnati. Mr. Chas. W. Skinner, engineer of that company reports that it has dug sewer trenches "through rock, hard pan, very stiff clay, gumbo and shale. Anything except solid rock in place can be handled with the machine with apparently no strain . . . . I have seen it move with apparent freedom over soft, wet, freshly filled ground on slopes of 10 to 30 percent, where I was astonished at its agility."

The Insley Excavator has the power, speed and stamina to take jobs as they come along, no matter how tough or inaccessible they are. It does them economically, and makes money for its owner, wherever he puts it. There are hundreds of owners who will vouch for this fact.

Is the Insley a good investment? Look it over, then draw your own conclusions.



SHOVEL



SKIMMER



CRANE



DRAGLINE



**Low First Cost**

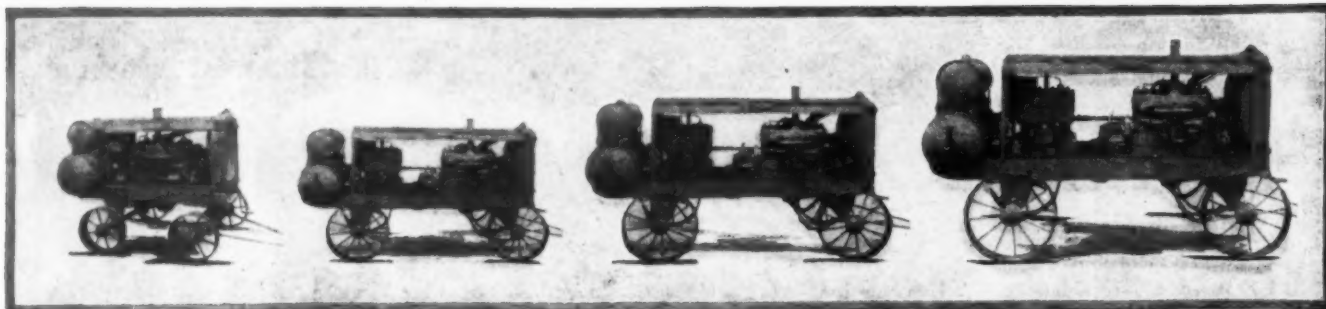
**Low Operating Cost**

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NO. 517

# INSLEY MANUFACTURING COMPANY - Indianapolis

Engineers  
and  
Manufacturers



60 cu.ft.

120 cu.ft.

180 cu.ft.

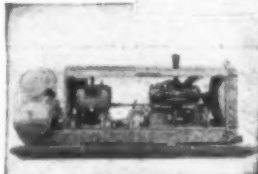
240 cu.ft.



For Truck  
Mounting



Direct - con-  
nected Motor  
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For Semi-Portable or Sta-  
tionary Installation.

## STEPPING THEM UP—

Built in four sizes with displacements of 60, 120, 180 and 240 cubic feet, "SCHRAMM" multi-cylinder engine driven compressors cover all requirements of the field.

SCHRAMM, INC., *Manufacturers*  
West Chester, Pa.

*Offices and representatives in all important cities*

# SCHRAMM

# Buhl

AIR COMPRESSORS

Below is illustrated the BUHL Type C Portable Compressor—one of the many different types of this popular line. Moderate in original cost and low in upkeep.

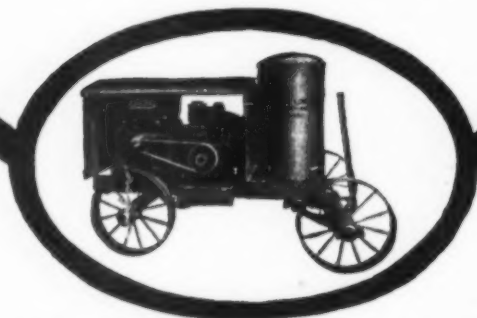
There are six sizes of portable air compressors in the BUHL line to choose from. For operating jack hammers, riveters, clay spades, concrete breakers, etc. The BUHL gives dependable air power at low cost—send for bulletins today.

Sales offices in principal cities

**THE BUHL COMPANY**

*Manufacturers*

37 W. Van Buren St., CHICAGO



These Gloves **\$1.25**  
Can't Drop Off

Sabin's gloves *can't* drop off. Hold tight elastic at the back of the wrist holds them securely without being tight enough to cause the least discomfort.



And how they wear—workers swear by them. Leather palm—fabric back.



Order a pair today, direct — you will join the ranks of those who use no gloves but Sabins.

**Sabin Co., Gloves**  
536-40 W. Federal St.  
Youngstown, O.

## ARE YOU PREPARED for THESE OPPORTUNITIES?



A great corporation, employing thousands of men and consuming millions of pounds of explosives each year, employs a man whose sole duties are the supervision of storage, transportation, and use of explosives in its dozens of operations. By the introduction of better methods he has helped to lower the company's accident severity rate, thereby reducing expenditures for workmen's compensation.

Another company, operating more than a dozen large quarries, producing millions of tons of crushed stone annually, places upon one man the responsibility for the success of huge blasts involving carloads of explosives in a single shot and representing investments of thousands of dollars in labor, equipment, and materials.

Certain difficulties seemed insuperable to a public utilities company engaged in driving huge tunnels many miles in length on a hydro-electric project. A special system of firing holes in rotation, introduced by a man trained in this branch of engineering, solved the difficulty.

The construction industry is awake to the need of such men. The day of rule-of-thumb methods is waning. The need for the scientific application of one of the greatest labor-saving devices of all time—explosives—is becoming widely recognized.

As a contribution to the cause of Industrial Education we have prepared a two-reel motion picture depicting the different types of projects where men trained in this branch of engineering are needed to decrease costs and increase safety.

A half-hour spent in viewing this film is time profitably spent. We will send it, free of charge and postpaid, upon request. Use the coupon below.

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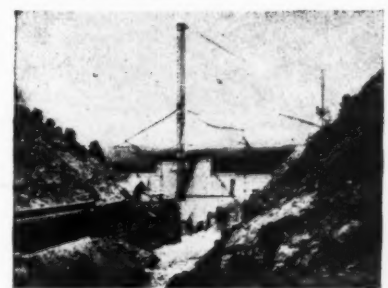
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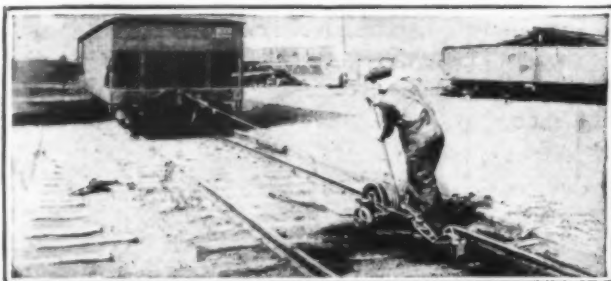
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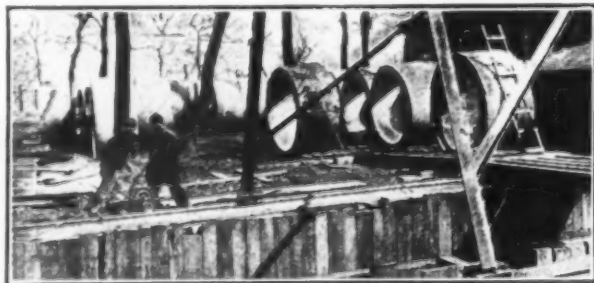
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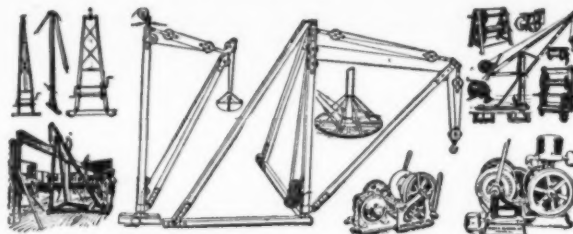


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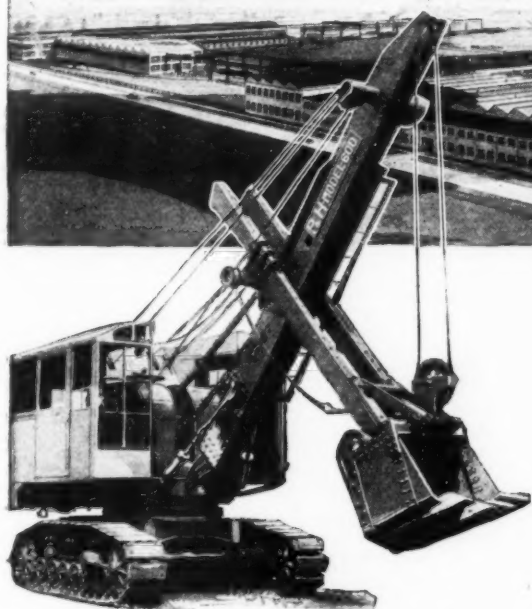
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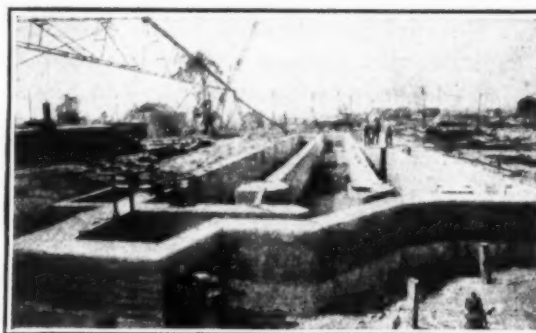
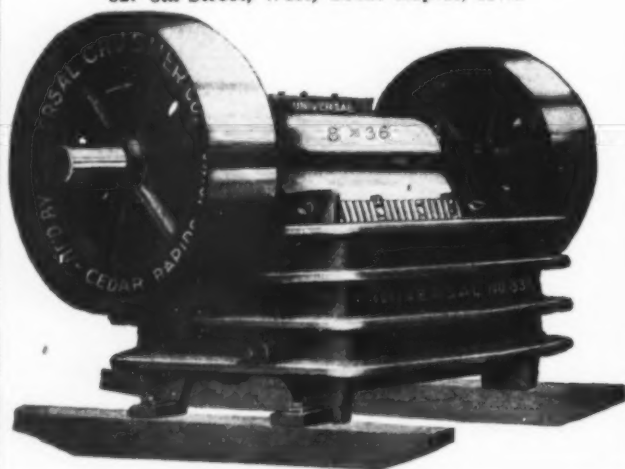
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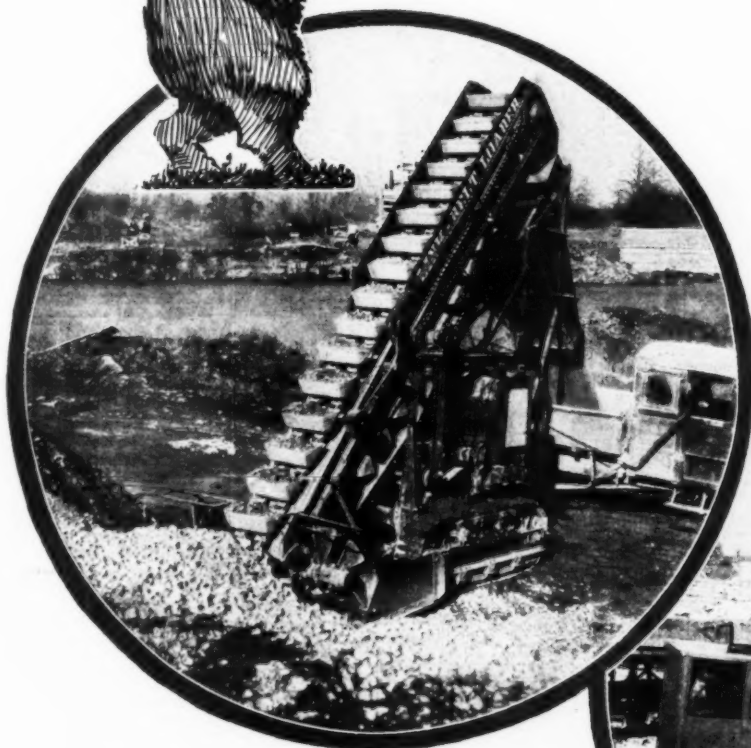


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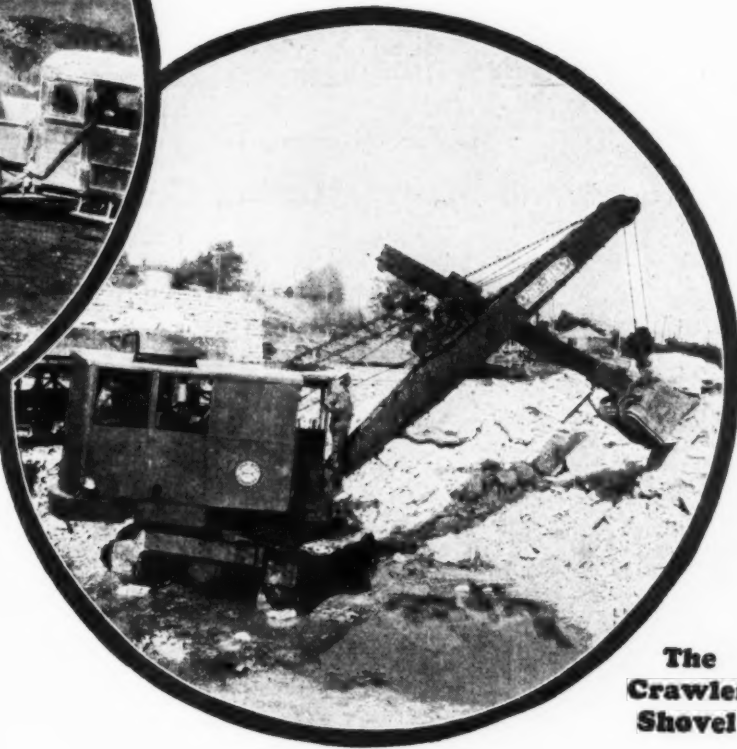


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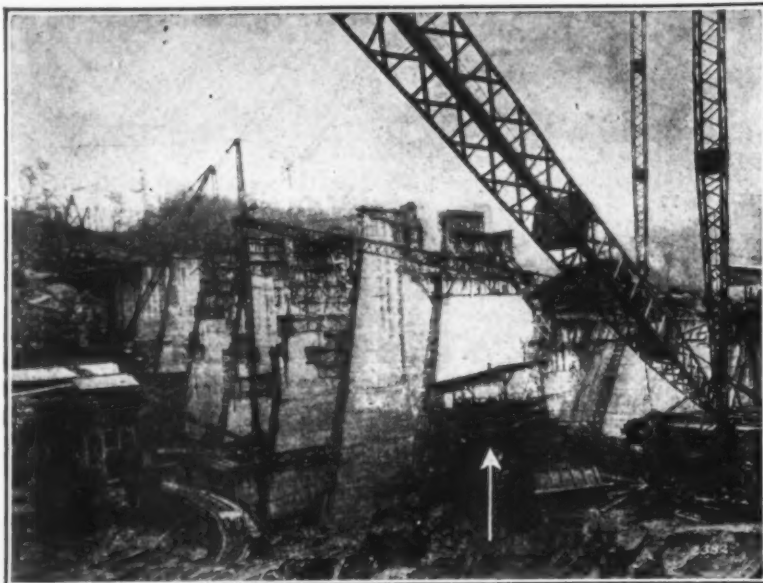
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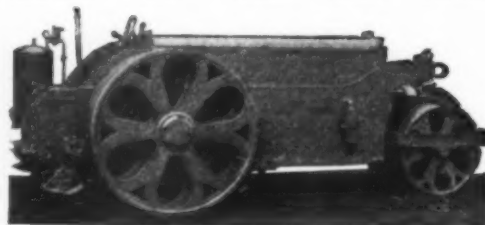
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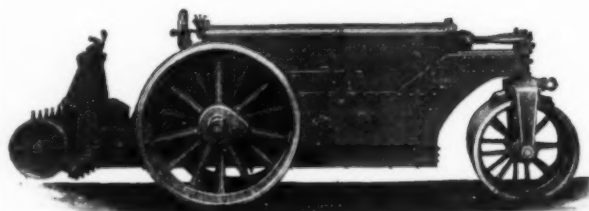
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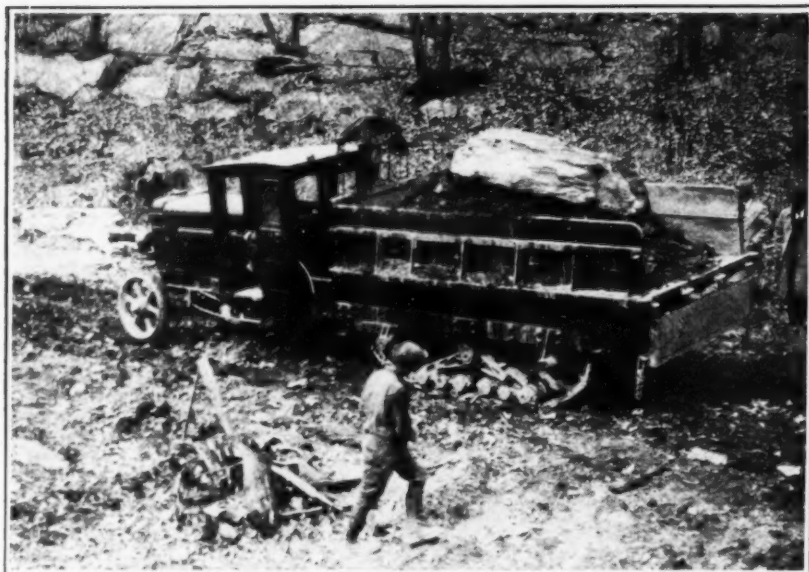
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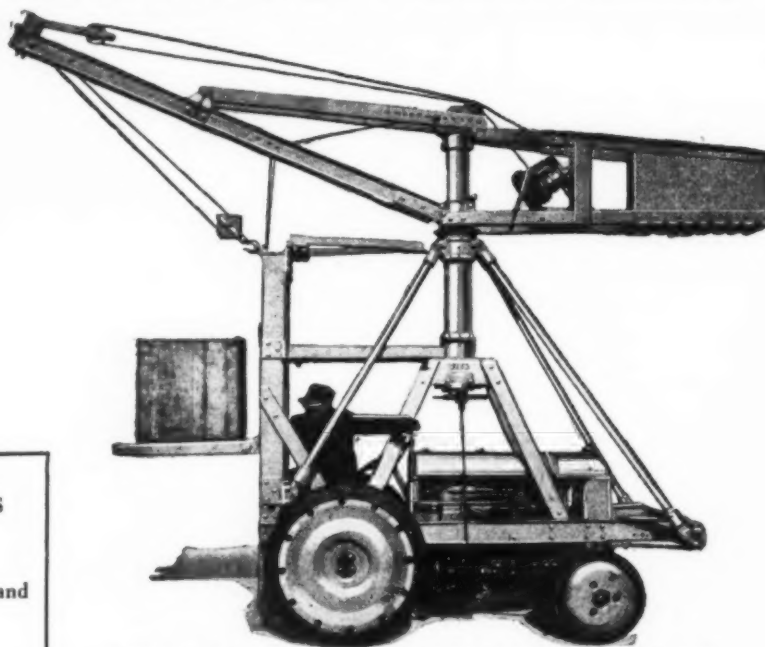
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State of New York } ss.  
County of New York }

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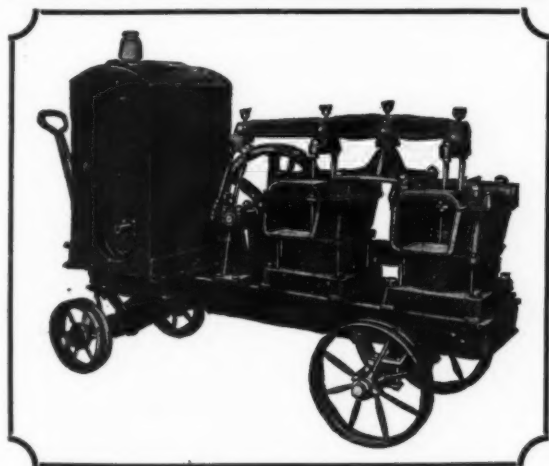
C. H. Thompson, Secretary.

Sworn to and subscribed before me this 30th day of March, 1927.

[Seal.] MARTIN J. WIEMER.

Notary Public Queens County Certificate No. 1819. Certificate filed in New York County No. 272.

(My Commission expires March 30, 1928.)



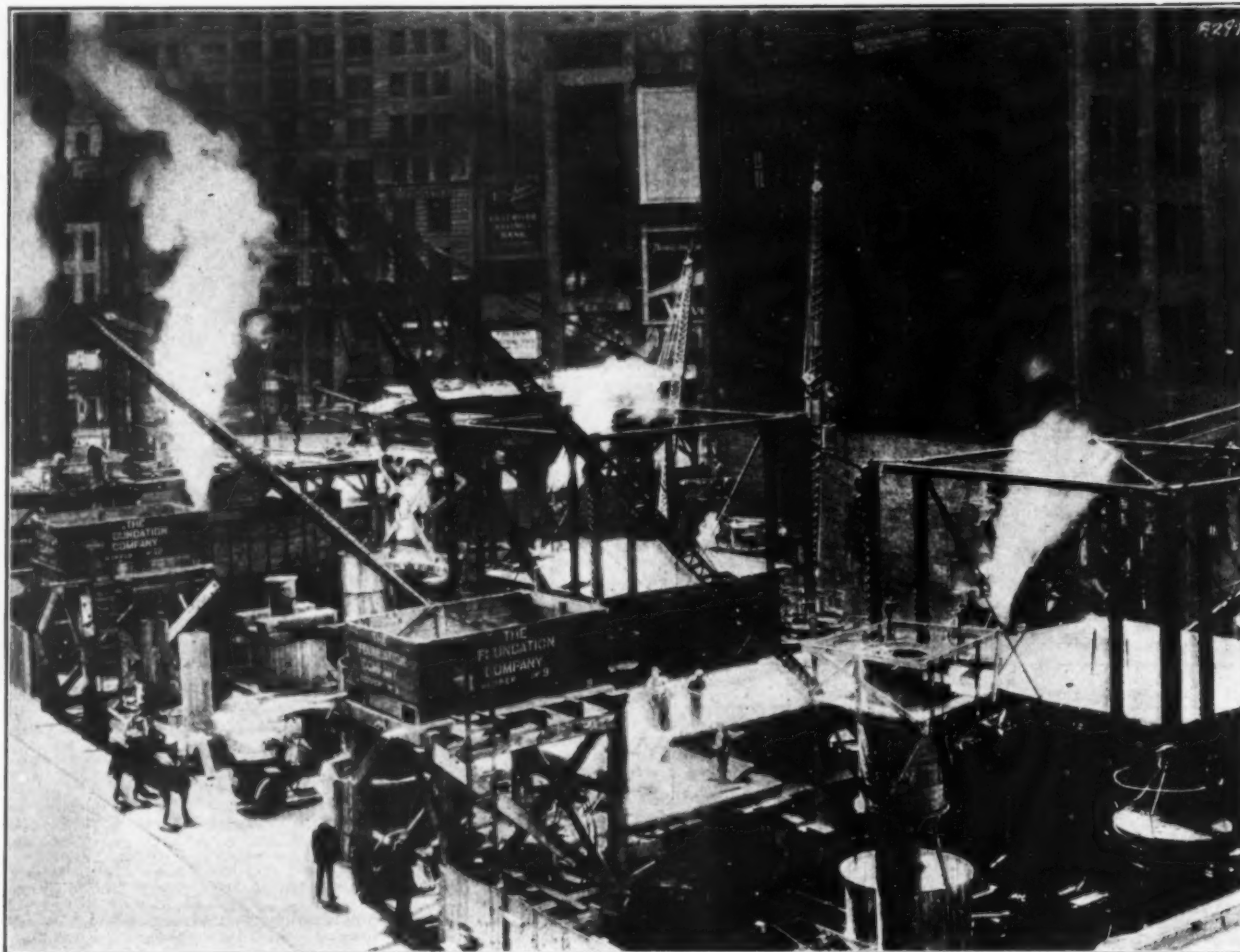
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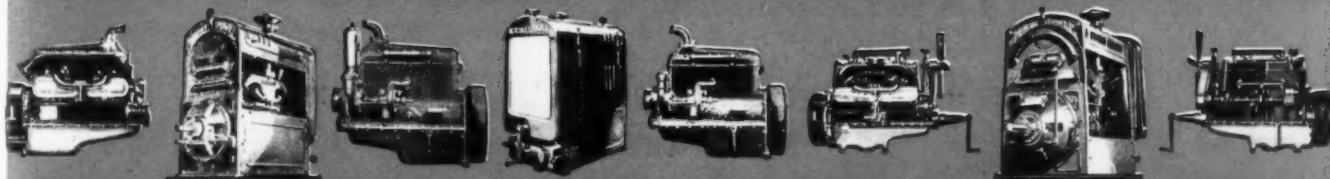
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